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“Gone Some Few Steps Ahead”

“He is not dead, this friend—not dead—
But in the paths we mortals tread
Gone some few trifling steps ahead,
 And nearer to the end.
So that you, too—once past the bend—
Shall meet again, as face to face, this friend
 You fancy dead.”

—*Robert Louis Stevenson.*



THE LATE DOCTOR R. G. McLAUGHLIN.

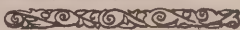
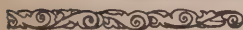
Born 1859.

Died 1925.

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ORAL HEALTH

*A JOURNAL THAT STANDS FOR THE OUNCE OF
PREVENTION AS WELL AS THE POUND OF CURE*



Vol. 16

TORONTO, JANUARY, 1926

No. 1

Relation of Dental Infection to Eye Troubles

C. E. HILL, M.B., TORONTO.

DURING a recent conversation with Doctor Seccombe, the subject of dental infection as related to the eye was discussed, and it is at his request I am giving you a few case histories which have at least proved to my satisfaction that dental infection has caused some eye troubles.

SCLEROSING KERATITIS.

Mr. A.—This patient was a man of sixty years of age who was acting as a clerk in the Parliament Buildings. He had a sclerosing keratitis, otherwise called a marginal keratitis, a superficial ulceration of the cornea which was gradually encroaching on the pupillary area. He had tried various treatments without avail. Several examinations were made to find the cause, viz.:—blood for Wass. and urinalysis. These were negative. He was tried from a dietetic standpoint for gout. The usual medication for gout and rheumatism was also tried without avail. With considerable trouble I persuaded him to have a tooth extracted. X-ray had proved this tooth to be infected. His eye, which had been inflamed for over a year and a half, promptly responded and it was entirely healed within ten days. It remained well for four months, when it again recurred. A further treatment of teeth cleared the eye permanently.

IRITIS.

Mr. McK. was a man of thirty years of age. He had an acute iritis, which always produces an irregular pupil, change in lustre of the iris, and considerable loss of sight. He volunteered, while giving his history, that this was his third attack. The first one was due to tonsilitis. Following that attack he had his tonsils removed. The second one was due to an infection in a tooth about three years previously. Following

the extraction of a tooth with an apical abscess, the eye cleared up rapidly and remained quiescent until two weeks prior to my examination. He consulted me with another attack in the same eye. I had a Wass. done and it was negative. A tuberculin test was negative. Dental x-ray showed that he had one bad tooth. The infection was cleared up and he left the city three or four days afterward. On his return I found his eye absolutely white and comfortable and not sensitive to light. He was able to return to work in a day or two, contrary to the usual rule of a patient with iritis, as this condition often lasts several months.

BLEPHARITIS.

I have had several cases of blepharitis, but I will describe only the following one, viz.:—Miss A. was a girl of twenty-one years of age and a stenographer. Since the age of ten, she had small pustules on the lid margins, with considerable redness and thickening of the lids, making her eyes irritable and disfiguring. She had tried almost every type of treatment to clear up these eyes. Her tonsils had been removed four or five years previously. She had tests for the various proteid sensitizations and they were negative. She had been refracted on two occasions. Her vision was normal and no glasses were prescribed. A culture from her lids showed the staphylococcus aureus. A vaccine was used without noticeable improvement. One month later she had a tooth attended to, and her eyes have remained comparatively normal and certainly more quiescent in the past year than they had been in the previous ten or eleven years.

HORDEOLUM OR STYES.

I wish to describe a case of styes. Boils could also be classed in this category. Miss F., a nurse in training in the Toronto General Hospital, had a series of styes and small abscesses in both lids, some of them invading the tarsal cartilage. The irritation and danger of infection was so great, she had to stay off duty. The Medical Department gave her a thorough physical examination. They found the blood sugar, urine, Wass., and tuberculin tests negative. She was given good tonics, diet and so forth, without avail. Stock vaccine was used and then an auto-genous one, but still the styes recurred. Her teeth were x-rayed and two were found involved. It is now one year since this patient has had any further infection, and she cleared up within ten days of the dental attention.

EPISCLERITIS.

This condition is a red elevation on the white of the eye (sclera). Frequently it is in the region or under the insertion of the external rectus muscle, but it may be in any part of the sclera. These conditions are

due to many causes, viz., tuberculosis, gout, rheumatism, or secondary to infections elsewhere such as tonsils, teeth, appendix or gall bladder. The description of one case may serve to illustrate this disease. Mr. G. was a man about fifty years of age. He started with attacks of recurring red eye without any apparent cause at or about the age of twenty-five. For over twenty years he tried the various oculists throughout the world—going as far as Vienna to see Fuchs,—Paris, London, and Berlin. Treatment only relieved him temporarily, and at the end of six or eight months he would have a recurrence of these attacks. He was advised by his family physician to have a dental x-ray, and to his surprise there were three or four teeth that were questionable. He had three dental opinions and on the strength of these he had one tooth extracted and a culture made. He could not tell me the type of infection which was found, but it convinced him that the other two teeth were involved. Since the dental conditions were corrected and for the past five years he has not had one attack of episcleritis and previously he had never been without an attack longer than six months.

RETINAL HEMORRHAGES.

This condition can be produced by focal infections of all types. Mr. A. was a man of thirty-eight years of age, working with the Bell Telephone Company in out-of-door employment. He had a good physique, all the tests being passed when he went overseas showing normal vision in both eyes. Tuberculin test and blood Wass. were negative on several occasions. He was working one day when suddenly the sight of the left eye completely failed. He consulted his family physician and he referred him to an oculist. All the tests were again repeated and were negative. The eye gradually improved as the hemorrhage absorbed, but suddenly he had a second attack and as he was working in the neighborhood of my office he consulted me immediately. I suggested a dental x-ray and treatment or extraction of any diseased teeth. It is now nine months since this patient has had the dental conditions cleared up. His eye has decidedly improved. There have been no further hemorrhages, and I feel that in time he will have a comparatively good eye other than the damage done by the floating opacities produced by the hemorrhages.

MUSCLE PARALYSIS.

Mr. R., aged thirty-four, suddenly developed a diplopia which was very annoying. He had to close one eye to avoid colliding with people as he walked along the street. His family physician made a thorough examination and by the usual tests he proved negative to infection with the exception of one tooth which was possibly infected. He was running a slight blood pressure, and he had headaches, which were of recent origin. He had a tooth given attention by his dentist and the muscular

paralysis improved so rapidly that within two weeks he could use his two eyes without double vision and with comfort. The blood pressure dropped to normal and he feels as well as he ever did in his life.

FACIAL PARALYSIS.

Along the line of facial paralysis I had a stout man, aged forty-four, consult me three weeks ago. His blood pressure was normal, Wass. and urine negative, tuberculin test negative. His family physician arranged for a dental x-ray and four teeth were found involved. Within ten days of the onset of this trouble, and six days after the dental attention, he was able to phonate satisfactorily, masticate his food without it becoming jammed between his jaws and cheek, and unless you examined him very carefully, you could not prove that he had had a facial paralysis. As most of you know, it takes several months for the average facial paralysis to clear up, if they ever do clear up.

ACUTE CHOROIDITIS.

Mrs. M., of Oakville, consulted me several years ago because of a sudden blindness in the right eye. She had all the usual examinations before consulting me and they were negative as to infection. She had one crowned tooth and one pivot tooth, which she reluctantly consented to have x-rayed. The crowned tooth showed an infection that could not be treated and she immediately had it extracted. The fluffy white vitreous exudate, produced by the choroiditis, contracted and slowly disappeared, leaving a small black scar in the neighborhood of the macula which did not destroy her central vision. Within two months' time the patient was comfortable and was able to use her eyes as usual. One year ago she consulted me again with a fresh attack in the neighborhood of the former one. The pivot tooth was again x-rayed and the root was found to be infected. The tooth was then treated. As the patient lives out of town I have not seen her since that date, except from a standpoint of changing her glasses a few days ago when I found she still had normal vision. She reported that the eye cleared up immediately after dental attention and it has given her no further trouble.

All these types of cases I have described above can be produced by infections in any part of the body, and I do not claim that the teeth are the main source of trouble, but I do feel that in the cases cited the teeth were responsible for the diseases named and the removal of the infection apparently cured the disease. If this report can be any stimulus to the dental profession to continue research work along the lines of infection, I will feel that the time spent in preparing it has been to good advantage. I might add that any person interested in reading the literature on infections will find a splendid article in the American Journal of Ophthalmology, written by Doctor Woodruff of Joliet, Ill., for the October issue this year.

The Dominion Dental Council of Canada

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Vice-President, Dominion Dental Council of Canada.



HE thoughtful editorial on "The National Progress of Dentistry in Canada," in the October issue of ORAL HEALTH, has caused the writer to offer for publication some ideas which he has held with increasing sureness for the last couple of years.

There are a number of phases of the problem as set forth in the editorial in question which the writer has little or no knowledge of, but the following is set forth with the hope that it will stimulate an interest particularly in the Dominion Dental Council, so that it may grow into a much stronger and more useful servant of the dental profession in Canada.

At the present time there are existent in Canada only three dental organizations of major importance, the field of whose activities is intended to be nation-wide. These are the Canadian Dental Hygiene Council, the Canadian Dental Association and the Dominion Dental Council. That some organization should be continually at work aiming to consolidate the dental profession into one whole, instead of allowing sectionalism to develop, will be admitted by all. That only an indifferent result is being obtained as the result of these efforts no one can deny, and we should carefully consider the present situation and the possibilities of the future.

The Canadian Dental Hygiene Council, though a useful body, is still in its infancy. A fairly good method to measure the future by is to examine the past and so forecast the future. This rule is of no value when we examine the case of the Hygiene Council. While we may hope for a good deal from this organization, which has developed mainly as the result of the disinterested expenditure of time and energy by a group of members of the dental profession of Ontario, in the present consideration, because the Council has not as yet proved its worth we will pass over its influence in Canadian dental affairs. In passing, a word of commendation must however be said as to the value of such efforts as the sending of Dr. Harry Thomson throughout Canada. Due to his message and personality a number of local differences have been ironed out and much good has been done.

There is undoubtedly a large field for the Council to develop and there are great possibilities for Dominion-wide public health service and education.

There has been a great deal of hard, unselfish and useful work done from time to time by officers and executives of the Canadian Dental

Association, and by the local societies which have entertained the Association at its biennial meetings.

In spite of certain obvious shortcomings a good ^(work) has been done for dentistry in Canada, and we would have been much more poorly off if the Association had never functioned.

It has been suggested that due to the long distances and various centres in Canada, it may be advisable to dissolve the Canadian Dental Association as it now stands, and in its stead concentrate on more local organizations. There is something to be said in favor of such a course, and local societies which promote the interests of dentistry should by all means be encouraged, but it would be well to consider very carefully before giving up one of the few bonds between dentistry of the East and the West, and Central Canada. Even though only a few attend from far away provinces they carry back a friendly feeling and some thoughts from the meetings in distant parts which tend to leaven the whole mass of those who stay at home.

As we go across the 49th parallel to the south of us, we see what can be accomplished in the way of national meetings drawing men great distances. Organization, enthusiasm and good financing seem to be the secrets of success, and if a workable plan for adequate financing of the Canadian Dental Association were evolved and carried out, the writer feels that the enthusiasm would be forthcoming to make the Association a strong factor in Canadian dentistry. A scheme of financing is being evolved for the Western Canada Dental Association, based on the methods in use in the United States, which may point the way towards a means of vitalizing the larger society.

The only other Dominion-wide bond in dental affairs at the present time is the Dominion Dental Council. Of this body the writer wishes to speak solely as a member of the dental profession in Canada, though at the present time the representative for Alberta.

The Dominion Dental Council was formed in 1905, after a good deal of hard preliminary work, by a group of far-visioned men who even twenty or more years ago foresaw the advantages of a common and higher standard for dentistry in Canada. Credit should be given to the men who conceived the idea and carried it to completion. A very efficient plan was evolved, the first examinations were held in 1907, and to date nearly nine hundred graduates have obtained the certificate of the Council. During all these years Dr. W. D. Cowan, who took an active part in the organization, has been the secretary and registrar, and a good deal of the success of the Council has been due to his prompt and efficient administration of its affairs.

However, it would now seem a proper time to look into the future, and see what we may reasonably hope that the Council may become and then

begin to shape our course with a definite end in view. If a personal criticism of its present position may be allowed, it is that the Council is not progressing to keep pace with the progress of dentistry in Canada. It is like a place of business, well built and a fine achievement nineteen years ago. Since then a few repairs have been made and some patches put on, but no longer is this sufficient. The Council must make plans and build anew, so that it may meet the new needs of the Dominion. Either that or one can see for it the passing into a leisurely and anaemic old age, with odd parts ceasing to function, till it becomes doubtful if the balance can carry on without them. This may seem a fanciful picture, but a little study of the situation as it is to-day should convince one that such is the case.

Having granted that the above is a reasonable view to take, we must consider what can be done to place the Council on a surer and more stable footing.

The position of the Dominion Medical Council is worth our attention.

The Medical Council is a body incorporated in the Dominion by the Federal Parliament at Ottawa. Examinations are held in all provinces, for those who hold the proper qualifications. All the provinces of Canada are included in the Council and there is no question of voluntary withdrawal. The holder of a Dominion qualification is sure that he may register in any province in the Dominion at any time. In the Western provinces and British Columbia fairly close to one hundred per cent. of the men who register are holders of the certificate of the Council. In fact, in British Columbia, the Dominion Medical Council examination is the only examination held for those who wish to obtain registration in the Province.

Does it not seem that such an objective should be set for the Dominion Dental Council? To-day we have a valuable organization for the unifying of dentistry and of dental standards in Canada, but it is greatly weakened by the fact that two of the provinces of the Dominion are not a part of it, and that any of the other agreeing provinces may withdraw as they see fit, on a few months' notice. There is no assurance that next year or the year after, another province or two may not withdraw and the whole thing cease to exist. It is no secret that one of the other provinces quite recently did consider such a course. Of what value would the certificate of the Council be, should another province or two withdraw? It is even questionable whether we should call it the Dominion Dental Council at the present time when the dentists serving nearly three million of Canada's population elect to have nothing to do with it.

These are the plain facts of the case. Whether the Dominion Dental Council will continue to serve as a unifying influence for the dental

profession in Canada depends on the attitude towards it of the majority of the profession.

As most of us are aware, the British North America Act in 1867 specifically gave each province complete control of its own educational activities. In a country so widespread, with diverse interests, and a quarter of the population of a different race and speaking a language differing from the rest, this is as it should be. Nevertheless the writer believes that a dentist who is licensed to serve the public in one province in Canada, should be considered qualified, and should be entitled to serve the public in any of the other provinces.

This state of affairs can only be brought about by a strong majority sentiment in all the provinces, for Dominion legislation such as was enacted to produce the present Dominion Medical Council. It is a long way—though perhaps not so far as it now appears—from the present uncertain situation to such a goal. The purpose of the writer is to attempt to bring the need of such action before the men who are concerned with the bettering of dental conditions in Canada, with the hope that through them, the sentiment in favor of such legislation may be developed in those provinces which support the Dominion Dental Council, and also in the provinces of British Columbia and Quebec where such sentiment appears to be in the minority. Such legislation has been tried and proven a good thing for the medical profession in Canada. Should it not also give satisfaction when applied to dentistry?

The Dominion Dental Council as it now exists offers a good foundation to build on. Now is the time when a forward step should be taken. One thing which will strengthen the Council for the larger part which the writer believes it must surely play, is to obtain Dominion incorporation. This will give it an official standing in the Dominion, which it has not at the present time.

The Council meets in August of 1926 in Halifax. In the past, provincial delegates have not had the interested support of the profession in the provinces they represent. It is urged that the boards and associations should give this matter time and consideration at their meetings, so that their representatives who are the mouthpieces of the associations they represent, may have at that meeting the interested support and considered opinions of their constituencies to aid them in working for a more useful Dominion Dental Council.

REPLACING STEELE'S FACINGS.—When it is necessary to replace a Steele's facing, the grinding-in of the new one will be facilitated by taking an impression with gutta percha and using this as an approximate model, grinding the facing to be as near as possible similar to the model before the final grinding to the backing.—*Australian Dental Journal*.

Extractions

[Dr. G. C. Nasmith, D.P.H., C.M.G., in a recent issue of the CANADIAN RED CROSS, has published under the above caption the following Oral Hygiene material, written in a form suitable for the layman. Dr. Nasmith is Chairman of the Canadian Junior Red Cross and also a member of the Executive of the Canadian Dental Hygiene Council.

Dr. Nasmith's regular work is that of one of the principals in the firm of Gore, Nasmith and Storrie, Consulting Sanitary Engineers. His interest in the Red Cross, the Canadian Dental Hygiene Council, and similar bodies is quite a personal matter engendered because of his desire to further community health efforts of every kind.]

 HIS business of getting everybody to have their teeth examined seems to me all bunk," said an acquaintance on the opposite seat of the train as he looked up from his paper. "Don't you think it is just propaganda to give dentists work?"

I studied my interlocutor for a moment or two and then replied: "I was in bed once for six months with acute arthritis of the joints. It sometimes took me half an hour to turn over in bed. Then I insisted on having my tonsils removed. I immediately began to improve but only to a limited extent. I waited a month and then I insisted on being taken to a dentist to have my teeth x-rayed. The x-ray films did not show anything wrong. I waited a week and then sent for a dentist. 'Pull this one,' I told him, putting my finger on a tooth which I had long suspected because it did not feel quite the same as the others. He pulled it. It had a pus sac on it, just below the margin of the gums. I began to make further improvement from that day and my arthritis disappeared. Two years in bed and on crutches is the penalty I paid for that diseased tooth and one diseased tonsil."

My acquaintance was silent. "You are sure," he asked, "that you located the cause?"

"Positive," I replied. "But I do not take chances any more. Every six months, by arrangement, my dentist calls me up and I go and have him look over my teeth. If necessary he removes tartar deposits. Each visit costs me about three dollars. Six dollars a year for insurance of my teeth is moderate enough. Nothing can get away on me now, as far as teeth are concerned at least."

"Then you think that this talk about regular attention of dentists to teeth is a good thing?"

"Absol"—I corrected myself in time—"Yes, I believe it is an ex-

cellent idea. Take these facts for instance. Last year in Dundas County, in Ontario, a very elaborate medical examination was made of 1,392 children from town and country."

"What for?" asked my acquaintance.

"To find physical and medical defects, particularly tuberculosis, so that the information thus obtained in an average district would serve for the province as a whole."

"I see."

"Of the children examined 360 (26 per cent.) had disease of six-year molars."

"What are six-year molars?"

"Six-year molars are the most important of all the permanent teeth in determining the shape of both the upper and lower jaws. They are also necessary in the process of mastication, upon which the health of growing children depends."

"Thanks, go on."

"In addition, 69 other children (6 per cent.) had disease of permanent teeth other than six-year molars. I almost forgot to add that 146 children (11 per cent.) had previously had disease of six-year molars, but at the time of examination the teeth were filled. Now comes the regrettable part. Thirty-six children (3 per cent.) already had their six-year molars extracted."

"That was a great pity," burst forth my acquaintance. "The poor little beggars will start out in life with a real handicap, won't they?"

"Absol—yes," I replied. "It is apparent that there is still much to be done from the standpoint of education to enable children, and especially rural children, to preserve these first permanent teeth. Tables prepared by the experts in charge of this survey showed that children with diseased teeth are more likely to be underweight than are children with healthy teeth. The rural children also had more diseased teeth than town children."

"I suppose you consider that to be due to medical inspection and accessibility to dentists."

"Yes, the general standard of health in the children of the Dundas Public School, where medical inspection has been carried on for five years, was found to be notably better than that in the rural schools. It is distressing to record that in one rural district over forty-two per cent. of the children showed disease of permanent teeth and that less than one-third of these had received dental treatment."

"Then it simply means that dental treatment must be made available for children attending schools at a distance from dentists or school dental services."

"That is exactly the conclusion reached by those who made the sur-

vey. You used almost their very words. Because teeth are so easily taken care of and repaired; because diseased teeth are a menace to health and are responsible for poor nutrition, underweight and a poorer quality of childhood physically and mentally, and because diseased teeth are frequently responsible for heart disease, arthritis and other ills, one would think it would only be necessary to have the attention drawn to these facts to have the remedy applied."

"Well," said my acquaintance, as I showed no further inclination to talk, "I intend to have my teeth gone over as soon as I get home from this trip. Also, as I happen to be on the school board I am going to boost for medical and dental inspection in our town. After all, our greatest wealth in Canada is the quality of our people, and if by spending a little money we can improve the quality, we increase our wealth. Isn't that true?"

I nodded, then as the train pulled into my station, gathered up my traps and bade my convert good afternoon.

Insurance and Bad Teeth



Awaken in the people generally a sense of the importance of sound health was one of the proposals urged at the annual meeting of the National Association of Insurance Committees of Great Britain.

Mr. F. D. Acland, chairman of the Dental Board of the United Kingdom, referred to the fact that a large proportion of the ill-health on which the funds of the insurance societies had to be expended arose from bad teeth. If alongside of elementary education and continuation schools up to 16 years of age they could have consistent, steady care of the teeth, so that young men and women would have a reasonable chance of coming into insurance at 16 with clean mouths and good dentition, the insurance committees would be able to give higher benefits. He urged that the Association and the Dental Board might co-operate to bring home to the minds of insured persons the advantage to general health of sound dental health.

The suggestion was accepted and both of these bodies will co-operate in dental health propaganda.

"It may be a little farther around the corner of a square deal,—but the road is better."

Intelligent Co-operation Between the General Practitioner of Dentistry and the Orthodontist in the Prevention of Irregularities of Teeth*

BY DR. P. T. MEANEY.



If you analyze the ages of human development you would find that it could be appropriately divided into three periods: the first, when man subsisted by the use of those things he found in nature, as a cave dwelling, wild fruit, fish and flesh for food, and a stick or a stone for a weapon of offence or defence. In the second, he fashioned himself a dwelling, constructing it from tree branches and skins; this protection he could set up in a place best suited to the food and water supply. He lashed the stone to a stick and made a more effective weapon; he cultivated the fruit, improving its quality and increasing its quantity. He herded and domesticated the food animal, controlling his supply. He studied the laws of the universe, and he made new combinations that had never existed before in the world.

In dentistry there was a long period in which the efforts were for the relief of pain. The second period was for the repair of damages and for the restoration of loss; and, finally, the period of prevention is just beginning. Operations on individual teeth are not made for restorations only, but for the prevention of the cause of the loss.

We are well on our way to a period in which dental diseases and their systemic consequences may be controlled. The dental practitioner holds in his relation to the family practice a very important link in the prevention of many diseases and their sequelæ, e.g., irregularities of the bones and teeth.

Malocclusion is always a perversion of the normal denture. The rapid development of this specialty of orthodontia has been due to a study of the denture, and not the invention of appliances. Prevention of malocclusion and other mal-developments of the bones and soft tissues of the face can only be accomplished by anticipating the causes of the perversion and preventing their results. The human denture is a unit in the same sense as our automobile is a unit. The driving power of the automobile is made up of wheels, each wheel having its respective cogs. The human denture is made up of a number of teeth, and each tooth has a characteristic number of cusps. The efficiency of the

* Paper read at the Congress of the European Orthodontological Society.

human denture depends on the relation of the inclined planes, that is, the structural element of the denture rather than the tooth.

The thought of our profession has ever been concentrated upon the tooth, rather than the denture as a mechanical unit or the cusp as the structural element. It is a significant fact that in the wear of proximal surfaces or the lack of a reproduction by restoration of the mesio-distal diameter of teeth, the distance around the arch may be reduced by several millimetres. When this happens there is a proportional wear of the inclined planes of the cusps. In order to prevent this wearing of the inclined planes an harmonious relation of diameters of all teeth would be necessary. The arch has not developed to accommodate teeth whose sizes were destined to be what they are in the early life of the child, some of them before the child was born. It is not logical to remove teeth to fit the arch, but rather to develop the arch to accommodate an harmonious relation of teeth.

The dental profession owes its existence in the past to the recognition by the world of the dentist's ability to eliminate pain, and his ability to improve the masticating apparatus. To-day the people recognize that an individual with a perfect denture can give greater efficiency in his undertakings and enjoy the pursuits of happiness more thoroughly.

The development of the human denture requires the full period of physical growth and vigor to attain its completion, and is dependent upon full physical growth and vigor to attain its typical perfection. We cannot expect to find a perfect denture in a frame, every part of which has in development fallen short of its hereditary possibilities or pattern.

The human denture not only requires full physical growth for its development, but it is itself a development mechanism by which the functional forces are distributed, resulting in the development of other parts, especially the framework of the face and head. The manner in which the denture is used becomes a characteristic of the individual, and results in determining not only the form of the arch but the shape of the face and head.

When we consider that a temporary denture must be replaced by a permanent one in which the individual teeth are larger and more powerful, it behooves us to be more cautious and give more consideration to the deciduous teeth. The premature extraction or loss of structure of deciduous teeth will not only interfere with the eruption of the permanent teeth, but also the growth of the bones of the head and face. It is due to the above fact that a very large percentage of malocclusions have their beginning in the period between the completion of the temporary denture and its replacement by the permanent one.

Another very important link in the development of the denture is the first permanent molars. These four teeth will determine the relation

of the mandible and maxilla during the replacement. The relation of these teeth to each other not only determines the relation of all the other teeth to each other, but determines the distribution of functional forces so as to mold the form of all of the face normally or abnormally. Loss of the first permanent molar causes more malocclusion than any other factor.

Living tissues are characterized by relation and, in order to have full development of the human denture, the living units of the tissues, the cells, must be of full vital vigor, they must be supplied with all the elements necessary for their metabolism in their food supply, and they must be stimulated to activity by the mechanical stresses brought to them by the full, vigorous functions in which the jaws and the teeth play a part.

Let us suppose that four first permanent molars were extracted at an early age; what will be the prognosis? First, the denture is robbed of four of the most powerful teeth; the anterior teeth are not carried as far forward as they should be, and remain in an abnormal relation to the rest of the skull, producing a peculiar concavity from nose to chin and under-development of the anterior part of the face. Supposing we remove one or both of the superior first molars and retain the lowers; what will be the prognosis? The superior anterior teeth will not move forward, and the space is partially filled by the tipping distally of the bicuspid and the tipping of the second molar mesially. The result is a false prognathism, which in reality is a result of the under-development of the premaxilla and the maxilla; and not an over-development of the mandible. Some of the most deforming malocclusions are produced in this way.

Let us remove one or both of the lower molars and retain the uppers, and what will be the prognosis? The lower anteriors are tipped distally by the pressure of the lip; the lower second and third molars are tipped mesially, more or less closing the space for the lost teeth. The upper incisors are apparently protruding, and the upper arch is narrow in the bicuspid region. These cases are mouth breathers, for normal lip function becomes impossible.

What will the prognosis be if there is a premature loss of the deciduous teeth? For instance, if the deciduous cuspid is decayed or lost there will be a narrowing of the anterior portion of the arch because of the loss of the cuspid relation, and we will find the laterals crowded lingually and the permanent cuspids high up either in a labial or lingual position.

The premature shifting mesially of all the first molars and bicuspid because of a loss of the temporary molars produces one of the most difficult malocclusions to correct, and one in which the most terrible

failures have occurred. We should take into consideration habits, such as thumb sucking, lip habits and anything that might disturb the balance of developmental forces which also affect the direction of growth and finally destroy the relation of inclined planes. Any abnormal habit, either functional or nervous, therefore, becomes a cause of malocclusion, and many of them are preventable, coming most naturally under the observation of the dentist first.

Mouth breathing is a very common perversion among children, and it is a cause of malocclusion; malocclusion is also a cause of mouth breathing. Abnormal breathing function disturbs the balance of developmental forces, modifying the growth of bone until the teeth come to be in such abnormal relation to each other that normal lip function becomes impossible. It is exceedingly important to recognize these cases early and correct the abnormal functions before the relation of the inclined planes has been disturbed to such an extent that normal development cannot go on.

At present we are only beginning to see a little light on the relation of diet and internal secretions to calcium metabolism. I believe that the dentists often, as I have said above, have the first opportunity of detecting these disturbed functions, a symptom of which would be the early resorption of roots of temporary teeth, or the lack of resorption of the roots of these teeth. In this we find a grave perversion in metabolism, the correction of which may mean much in the entire history of the individual. Diet would be one of the means of correction.

In conclusion, the preservation of the permanent molars, the retention of the perfection of the temporary denture through its entire period of function, the recognition and prevention of abnormal habits and the detection of abnormal metabolism through their dental manifestation, present a challenge to our profession which will call for all the vigor of all the men in it, to reduce the increasing number of malocclusions among all classes of citizens. If these conditions could be strongly enough impressed upon the dental profession, the dentists could do more for the good of humanity in the prevention of malocclusion than twice the number of orthodontists could accomplish in the correction of malocclusions when they become firmly established.

DISCUSSION.

The President said it was a matter of much regret that Dr. Meaney was not present to answer whatever discussion might take place on his paper. In France it was not the custom to discuss papers when the authors were not present, but that custom did not hold with the European Orthodontological Society. The thing that had struck him most about the paper was the question of prevention. A great deal had been said so far about prevention, and he would like to call atten-

tion to a very interesting paper on the prevention and prophylaxis of malocclusion and maxillary deformities which had been given last January by George Wieland and Dr. Denevosy, read before the French Society of Orthodontics. He considered that paper a most valuable contribution to the literature of orthodontic science. He would not, of course, attempt to give a synopsis of that paper, but there was one thing which the authors mentioned in it and which he desired to bring out. The authors said that there were three periods in a child's life, and that therefore three periods in this prophylactic work could be considered. The first period went up to two years; the second period went up to six years, during the time in which the child had all its temporary teeth; and the third period was from six to twelve—that was, the casting off of the temporary teeth and the cutting of the permanent. According as one considered those different periods the prophylactic action would be different. If one took the child in its youngest period until the age of two, when all its teeth were cut—its first teeth—the dentist had nothing to do with it. He did not see the child; he never had it in his chair. The persons who had the most connection with the child were the family doctor and nurse obstetrician. Those were the people who, by directing the mother, could influence her and get her to give the child proper diet and so on, so that the child would develop normally and have normal jaws for its age when it came to be two years old. Mostly until the age of six the child was in the hands of its parents. Therefore from the age of two until the age of six the parents would be the ones who would have the care of the child mostly and whose prophylactic teaching would be the greatest. From the age of six the dentist would have occasional connection with the child for decay, and so on, but his connection would still be very slight. From the age of six until the age of twelve the child was losing its temporary teeth and cutting its permanent teeth. During that period the physician probably had very little to do with the child. Its parents, of course, still had the upper hand, but it was the dentist who would direct the parents during those ages and tell them what to do and what not to do. Therefore, as one passed along the child's history, one saw that in the first period the physician was the man who must direct the prophylaxis; in the second period it was the child's parents, and in the third period it was the dentist. But who knew about that? Nobody. It was the business of orthodontists to teach them; they must teach the dentists; they must teach the physicians, and they must teach the parents what must be done for prophylaxis.

Dr. Lockett said there were quite a number of things which could be stated about the paper in compliment to the author. There were, however, a good many controversial points in it. No doubt the author could find apparent proof for many of the statements made in the

paper, but, on the other hand, he (Dr. Lockett) could do the same thing with regard to many points on which he might disagree with Dr. Meaney. He could mention many instances which would disprove some of the statements made.

The President said Dr. Lockett's remarks showed how difficult it was to discuss a paper in the author's absence, and gave the reason why such a procedure was not adopted in France—namely, that it did not give the author a fair chance to defend his point of view.

All the members could do was to ask Dr. Lockett to extend the thanks of the society to Dr. Meaney, and to express the hope that at some future meeting Dr. Meaney would appear in person to read a paper.—*The Dental Record*.

Ethical Standards of Dental Practice in South Africa

IN the province of Natal, South Africa, advance regulations in regard to professional conduct of dentists have been set up which should make us sit up and think. "Any dentist entitled to practise in Natal who shall publicly exhibit specimens, appliances or apparatus of a dental or other nature; or advertise either in the newspapers, or magazines, or by handbills or stationery, billheads, telephone or other directories, or by any other similar agency; or attempt to attract patients by means of advertisements published in newspapers, or circulars, or by handbills, describing methods of practice, patented or secret processes, or of such nature as to indicate claims of superiority over other practitioners, or depreciating the value of their work; or publish or allow to be published, or exhibit or allow to be exhibited in any place whatsoever, his scale of professional charges, whether fees alone are mentioned, or cheapness or other advantages; or display or allow to be displayed, his name or occupation, or both, in any window or signboard or use any advertising sign other than the usual nameplate recognized by the medical profession; or practise in any other name than his own; or fail to comply with any notice issued by the council regarding advertising in breach of this regulation; shall render himself liable to be adjudged by the Medical Council to be guilty of disgraceful conduct in a professional respect, and to have his name erased from the register."

If we had regulations in this country which would do no more than remove the display of artificial teeth from our main streets, they would be a decided advance towards a civilized community. We may learn much from Natal.—*Extract from Editorial in Medical Journal and Record*.

Canadian Dental Association



NEW YEAR greeting card has been mailed to every registered dentist in Canada. Thanks to the co-operation of the Registrars of the different provinces, our mailing list is as nearly correct as it is possible to get it; if you have not received a card, therefore, we will appreciate notice to that effect, so that you may be added to our list.

We feel that there are many who are planning to make the trip next summer, whether they come by rail or motor, a vacation trip as well. We have, therefore, obtained from the Publicity Bureaus of the three Maritime Provinces a number of booklets which will give full information on auto routes, vacation hotels, fishing, scenery, etc. These will be gladly forwarded to you, on request. The following are available: "Nova Scotia Road Conditions and Highway Markings," "Historic Nova Scotia," "Nova Scotia By-the-Sea," "Summer Hotels of Nova Scotia," "Highways You Should Know, N.S.," "New Brunswick," "Map of Principal Roads of the Maritimes," "The Garden of the Gulf" and "Prince Edward Island, Canada's Cozy Corner."

Halifax Hotels—The following hotels are all within easy distance of the convention buildings:

Carleton (American plan)	\$4.00 to \$5.50 per day.
Halifax (American plan)	\$5.50 per day.
With bath attached	\$6.50 per day.
Queen (American plan)	\$5.00 per day.
With private bath	\$6.00 per day.

It is recommended that you make your reservations very soon. While Halifax has not the large surplus hotel accommodation of larger centres, there is ample accommodation available to take care of a very large convention, but we would ask your co-operation by making your reservations very early.

Next month we will be able to give on this page a preliminary notice on programme. In the meantime we are still waiting to hear what you want particularly to see. Will you, by your co-operation, help us to make this a memorable convention?

34 Larch St., Halifax.

J. STANLEY BAGNALL,
Sec.-Treas., Canadian Dental Association.

There is no higher rank than that of worker. No title can ever make a loafer a noble-man.

Routes to the Canadian Dental Convention, Halifax, August 16-17-18-19, 1926



NUMBER of inquiries have been received as to the different routes by which Halifax can be reached. There is a choice of three routes, depending on whether you are planning to travel by train, motor or water.

Rail—There is a choice of two routes from Montreal. First, by the Canadian National line, running along the St. Lawrence valley, then across New Brunswick to Moncton, passing through the Metapedia Valley. Then to Halifax by way of Sackville, Amherst, Truro, etc. Second, by the Canadian Pacific through a portion of Maine and New Brunswick to St. John. From St. John there is a choice of two routes, either by way of Moncton and then to Halifax by the same route as the C.N.R., or by boat to Digby, then by way of the Annapolis Valley to Halifax. This route passes through the famed Evangeline country, so intimately associated with the history of the early settlement of Canada by the French and English.

Those who are planning to take side trips to Prince Edward Island or Cape Breton will find the route through Moncton the more direct. Connection for Prince Edward Island is made at Sackville, and for Cape Breton, at Truro.

Motor — The route recommended is Quebec, Riviere du Loup, Edmundston, Fredericton, St. John. This portion of the trip includes a beautiful trip down the St. John River valley. Then from St. John there is a choice of either continuing on to Moncton, thence to Halifax by way of Amherst, Parrsboro, and Truro; or, the alternate route from St. John is by boat to Digby, then to Halifax through the Annapolis Valley, or by a slightly longer route along the south shore of Nova Scotia

The roads are good all the way, with convenient hotels and service stations. All the routes are marked, and picturesque side trips from the above main trails can be readily taken.

Water—The trip may be taken by water direct from Quebec to Halifax by a very comfortable line of steamers, designed especially for the summer tourist traffic. The present schedule plans for a steamer to arrive in Halifax on the morning of the 17th; it is possible that it might be arranged to have this boat arrive in Halifax on the 16th, if a sufficient number are interested.

A varied supply of booklets and maps giving more detailed information of the above trips are available, and we will be very glad to put you in touch with this information if you will let us know the route which appeals to you.

C. B. H. CLIMO,
315 Barrington St., Halifax.
Chairman,
Transportation Comm.

J. STANLEY BAGNALL,
34 Larch St., Halifax.
Secretary,
Canadian Dental Association

Teeth, Health and Good Looks

G. VERNON FISK, D.D.S., TORONTO.

[At the request of the Canadian Red Cross, this manuscript was prepared by Dr. Fisk in a form suitable for circulation among laymen.]



HAVE you ever carefully observed the animals of a circus or zoo? If so, you have probably been interested in the curiously strange and varied forms of mouths and teeth of the different creatures. If you gave any thought to the matter, you no doubt reasoned for yourself that, throughout the animal kingdom, teeth are peculiarly adapted to the work they have to perform.

The elephant's immense molars, with their flat surfaces working as a grinding machine, are particularly suited to prepare grass, fruits and tender shoots of trees which he eats. This type of tooth would not be adequate for a lion or a tiger, living largely upon food such as meat. His teeth are long, fang and scissor-like, suitable for rending and tearing. Similar characteristic differences may be observed in domestic animals such as the cow, whose food being herbivorous like the elephant's, requires teeth that resemble in shape those of that animal; while the dog, whose diet is largely carnivorous, is provided with long fanglike teeth approximating, in form, those of the lion.

Human beings, however, unlike most animals, live upon a variety of food; we find, therefore, that their teeth, being especially designed to perform those functions necessary for human existence, are a combination of the teeth of both carnivora and herbivora.

At birth, the child is, to all outward appearance, without teeth. In reality, the crowns of the first, or temporary teeth, are formed, but hidden beneath the gums, their development having commenced as early as six months before birth. Indeed, surprising as it may seem, under these temporary teeth are to be found also the beginning of some of the permanent set. It stands to reason that these teeth cannot grow as they should, if there is not provided a sufficient supply of the proper kinds of food necessary for their development. Phosphorous and lime have been found to be two of the most important mineral salts to make sound teeth. These necessary elements are abundant in many of the natural foods such as milk, green vegetables and fresh fruits, and should be supplied the child daily to aid the proper development of their teeth. It is important, too, that adults should include these foods in their diet, in order that their teeth may be supplied with sufficient lime to resist decay.

RELATION OF BABY TEETH AND BEAUTY.

Few parents realize the importance of a child's temporary teeth. After these teeth are all in place, care must be taken that the food given the child should undergo thorough and vigorous mastication, for this exercise promotes the normal growth of the bones of the face. The extreme importance of proper chewing may be realized when one considers that the jaws and teeth are the basis of the beauty of the lower two-thirds of the face. These teeth not only serve for the mastication of food during a period of rapid body development, but maintain space for the developing permanent set as well. The loss of even one of them prematurely, through extraction, allows the neighboring teeth to move towards the space.

If, however, the dentist places upon the teeth immediately adjacent to this space, metal bands, joined by a piece of stiff wire of the proper length to keep the teeth apart, no unfavorable movement of these teeth can take place until the permanent teeth come through; such a splint should be used in all cases where it is found necessary to remove one or more teeth too soon.

A condition similar to that described above may be caused if a temporary tooth is allowed to decay on the surfaces adjoining other teeth. Here, again, through loss of tooth tissue, there is a drifting together of the remaining teeth. As a result, the oncoming permanent tooth may be either retarded in coming through the gum or may be squeezed out of its normal position. In some instances it may not be allowed to come to place at all. The baby teeth, therefore, have a most deciding influence upon the regularity of the permanent set. How important it is that they be carefully watched and any decayed teeth filled before the cavities become large. When the teeth and gums are sore, due either to decay or extraction, a child may form the habit of bolting its food to avoid the discomfort of forcing the food against the tender gums or sensitive teeth. This habit acquired in childhood is seldom corrected later, and may result in defective digestion, assimilation and elimination as well as detracting from the appearance of the person.

On the other hand, a temporary tooth is often retained beyond its natural time, and may prevent its permanent successor from coming into place. The extraction of such a tooth may relieve the condition.

Children should be taught the effect upon the teeth of over-indulgence of candy and sweets. When excessive amounts of these kinds of food are eaten, either at meals or between meals, the appetite becomes quickly satisfied. The effect is to decrease the desire for those foods which provide bone-building material. If the over-indulgence in sweets

continues for any length of time the quality of the teeth changes and they become susceptible to decay.

Much of the dental decay to-day may be attributed to this cause. Therefore, care should be given these teeth. They should be cleaned not less than twice a day by an older person, until the child reaches the age when he can be taught to thoroughly perform this duty for himself.

There is one tooth which requires special attention. It is the sixth tooth back counting from the centre. Because it is the first of the permanent teeth to appear, and, coming in behind the last temporary tooth, it is so often mistaken for a baby tooth. Too often, decay and loss of this important tooth follows. This is nothing short of a calamity because, not only does its loss mean lessened masticating (chewing) surface, but, as it forms, in a manner, the keystone of the permanent dental arch, its loss also means the collapse of this arch to a greater or less extent, consequently modifying the facial symmetry of the child.

As the front temporary teeth are so much smaller than the permanent ones, the question arises, how is it possible for the permanent teeth to come into their proper places without undue crowding or protruding? The answer is that the normal expansion of the bones of the jaw naturally, through growth, provides the room for these larger teeth. Such growth of the bones of the jaw should take place that, just before the front teeth are ready to drop out, there should be space enough to put a ten-cent piece edgewise between them. When the natural spacing has not developed at that time, you may be certain that crowding the permanent set will result. If this has been discovered before the age when the teeth are commencing to be shed, it is quite probable that the character of the food has been such as to require little chewing. A change from a soft, pappy diet, to one which does require vigorous mastication, may assist the tardy growth of the jaws and prove to be helpful. But, in cases where the spacing is not discovered early enough for this to be effective, special treatment may be necessary. Your dentist will either correct the condition himself or advise you to consult someone competent to render such assistance.

FACIAL DEFORMITIES OFTEN PREVENTABLE.

One frequently observes individuals with displeasing facial lines that might have been prevented if proper care had been exercised in earlier life. What are the causes of these deformities? On the threshold, we are faced with the problem of the possible influence of heredity. Many leading dental authorities ridicule the suggestion that it is a factor at all. They deny the possibility of the child inheriting the large teeth of one parent and the small jaws of the other; and, it must

be frankly admitted that convincing proof has not been furnished. These men point to the fact that, as a result of mild stimulation, it is possible to make conditions favorable for growth from a small jaw to one of ample size to accommodate the relatively large and malposed teeth. On the other hand, we find that Nature always follows a type. For example, children resemble their parents in stature, the color of the eyes, the hair, and in many other physical characteristics. Again, too many teeth, as well as missing teeth, are found with impressive regularities in families, sometimes skipping a generation, but quite often recurring in the next.

With this brief reference to heredity, we shall consider some other causes of facial deformity upon which there is a greater uniformity of opinion. There is no doubt that, whatever influence heredity may have upon a child's development, habitual breathing through the mouth has been a direct cause of malformation.

Mouth breathing is one of the most common habits causing undesirable facial changes. The extent to which this is indulged in varies, as do also its results. For instance, in some cases, there is noticeable only a drawn appearance to the lips when closed, or a slight separation of them for comfort when at rest. In other cases the mouth is continually open, which causes the person to present a dull, stupid, listless appearance. Constant, or frequently repeated breathing through the mouth, is caused chiefly by adenoids, enlarged or diseased tonsils, or obstruction in the nose. Therefore, if a person snores at night or if he goes about during the daytime with his lips habitually apart, it is advisable that a physician should make examination to discover any possible abnormality. When the obstruction has been removed, the individual may be assisted in overcoming the habit of breathing through the mouth by wearing at night, over the lips, strips of surgeon's silk isinglass plasters; or by the use of a health appliance, which consists of a headgear made of cloth tape, with a strip across the mouth and chin strap of the same material. A constant effort should be made to keep the lips closed when relaxed during the daytime.

Instead of a receding chin as in the foregoing case, another type of disfigurement is one with a prominent lower jaw. This condition is invariably associated with abnormal tonsils accompanied by an enlarged tongue, which in its efforts to make room for itself, continually tends to press the jaw forward, with a resulting over-developed and heavy appearance to the jaw.

Other irregularities in the facial appearance may be caused by various detrimental habits. Foremost amongst these, may be considered some habits of eating, as for example, the bolting of food; or the choice of such foods as require little or no chewing. As a result of such the jaws may not receive sufficient stimulation to promote normal growth

and the teeth may develop irregularly, giving the individual's face an unpleasant or unsightly appearance. Further, habitual sucking either of the tongue, pacifier, or thumb may produce a narrowness of the lower part of the face. Indeed, even such simple actions as resting the chin upon the hand, biting the nails, sleeping with the head upon the hand or arm, repeatedly performed, markedly influence the facial contour, and should be broken early before they have had any far-reaching effect.

The child of to-day is the adult of to-morrow. As the molding years of youth are those in which many life habits are established, it is, at the same time, a period in which no natural feeling of concern regarding looks or health is manifested. It, therefore, behooves those responsible for the care of the young to guard carefully the habits which are being formed, so that the ounce of prevention may be applied to those which are detrimental before they have exerted any baneful effect upon the individual's appearance or health. Good habits should be started to-day; to-morrow may be too late.

Ethics of Consultation*

BY S. D. RUGGLES, D.D.S., PORTSMOUTH, OHIO.



THE past decade has wrought many changes in the practice of medicine. These are due largely to specialization and the emphasis placed upon focal infection. Dentistry has been brought into this work chiefly through oral surgery and the importance of mouth infections.

The attitude of the general practitioner toward the dentist has been modified since the medical journals report findings by such men as Billings, Mayo and others. Physicians frequently refer patients with the diagnosis already made, and the directions for treatment, radical though it be. Another and higher type of physician requests an examination and report by the dentist, to be considered with the other findings.

The stumbling block in many cases, however, is the lack of knowledge on the part of both professions as to the conditions which must be considered. The best results are hampered by the lack of knowledge of the two professions, each in the field of the other. Medical schools pay scant attention to dental subjects and the same has been the custom with dental teaching in regard to medicine. Some knowledge of these subjects is necessary on the part of all concerned in order to get a satisfactory and intelligent diagnosis. It is incumbent upon every practitioner of dentistry

*Read before the Ohio State Dental Society, December, 1924.

to be a reader of at least one standard medical journal, and, I might add, that the same holds true of those in the medical profession as to dental literature.

While both degrees would be beneficial, it is not necessary for honest co-operation and intelligent service. A broader and better understanding is essential however, if the best interests of the patient are to be considered. We are all familiar with the gross ignorance of the general practitioner as to our own field, but did it ever occur to you that our own short-comings are just as grave from a medical standpoint?

The internship and hospital experience which has been provided for the medical man has been withheld from the dentist. Instead of disease in general the dentist has seen only the diseased mouth which manifested conditions treated largely by mechanical means. The day is rapidly approaching however when this condition will be corrected in dentistry, when the higher educational requirements and lengthened college curricula are established.

Dr. Chas. Mayo said, ten years ago, when the idea of systemic infection first took such strong hold on the medical profession, that the next move was up to the dentist. The many obscure and unsolved problems of disease warrant the closest possible co-operation between the members of the two professions.

ETHICS.

Ethics, whether it be medical or dental, is, to the average citizen, synonymous with unionism to the manufacturer. As Reisman very aptly says, "The laity conceive it to be a tacit understanding between confidence men for the exploitation of the laity." This is no doubt true in some instances, but not so in the best type of both professions.

Medical ethics is much more complicated and covers many more subjects. In fact, eighteen pages are devoted to it by the American Medical Association while but a single page is required by the American Dental Association. A dentist working with a physician is judged according to the medical code, so far as the physician is concerned. It is well to be posted on the points of difference between the two. The requirements of the two professions are not identical, and it is these which need attention.

For instance, the freedom of a dissatisfied dental patient in making a change in his service is seldom questioned. Every dentist in America would be in trouble if the medical code applied to us. Patients are not considered as chattels by the dentist. Many come and go with great freedom, while others remain the patient of one man. It is not uncommon for consultants to disagree in dentistry as in medicine, but the patient is not hampered in his choice of the one whose advice he will accept and follow. There is no code to prevent any dentist so selected from assuming charge of the case after the other one is discharged. There

are times, however, when it may be wiser not to do so for personal reasons. A written release and a receipted bill are not essential to carry on the case. To accept a patient where consent is withheld, in a medical practice, is equivalent to causing a boycott by the entire medical fraternity.

In case of litigation both professions are protected by law which requires only the average of skill as practised in a given community. Physicians are allowed large latitude in their practice, but the dentist is confined to a limited field, making him more proficient to handle certain types of cases, which are often presented to the physician first. To summon help is optional, and the case is often undertaken with but bad results. No law compels calling in assistance, even when available. Ignorance is bound to cause mistakes under such conditions, but a malpractice suit cannot be won, owing to the solid phalanx summoned when testimony is taken. The boast has been made in one community in this state that no physician had ever lost a damage suit in its history.

Right or wrong, the medical fraternity stand united, with the possible exception of expert testimony where large fees are available. You will also observe that their consultations are behind closed doors, simulating the secret treaties of nations.

These statements are made wholly for your benefit, for as time goes on, you will most likely be called in on some case where differences will come up. The dental profession is not hedged about by any such set of rules and is no doubt ignorant of their existence. However, the new era which is upon us makes it wise for all of us to be better posted in our association with medical men. Ignorance will be no excuse when storm breaks and expensive litigation ensues to prevent a boycott being declared.

SUMMARY.

Neither physician nor dentist possesses all the knowledge, separately, to solve difficulties which may arise in complicated cases. The best interests of the patient are served by the combined knowledge of the two in co-operation.

The patient is morally and legally entitled to the opinion of all consultants, and consultations should not be framed to cover up mistakes. Open consultations should be the rule, not the exception.

Expert testimony should be selected by the court, not by litigants.

If you don't think co-operation is necessary, watch what happens to a wagon if one wheel comes off.

The Borocaines—A New Class of Local Anaesthetics

A. J. COPELAND AND H. E. F. NOTTON.

THE borocaines of the local anæsthetic bases possess entirely specific properties as surface anæsthetics, and it may be convenient to class them together under the name of "borocaines." The efficiency of the borocaines as surface anæsthetics depends upon the pH value of the salt in aqueous solution being kept high—namely, on the alkaline side of neutrality; great care has, therefore, to be taken in preparing the salt to ensure that no factor is introduced which will depress the pH value.

Anaesthetic Efficiency of Salts of Cocaine Substitutes on Rabbit's Cornea (taking the efficiency of cocaine hydrochloride as 1).

1. Eucaine Group.		Alypine.	
Borate	20.0	Borate	4.0
Lactate	0.5	Hydrochloride	0.7
2. Holocaine Group.		Ethocaine (Novocaine)	
Borate	9.0	Borate	2.5
Hydrochloride	2.5	Hydrochloride plus sod.	
3. Ethocaine Group.		bicarb. 10mgm. per	
"G.G.S."		c.cm.	1.0
Borate	10.0	Bicarbonate	0.5
Hydrochloride	1.0	Phosphate	1.0
Butyn.		Benzoate	0.5
Borate	10.0	Salicylate	0.25
Sulphate	2.0	Lactate	0.25
Stovain.		Hydrochloride	0.05
Borate	4.0	"523"	
Hydrochloride	0.25	Borate	2.0
Tutocaine.		Hydrochloride	0.125
Borate	4.0	4. Mixture.	
Hydrochloride	0.5	Beta-eucaine borate 1 plus	
		ethocaine borate 4	4.0

Conclusions—1. The action of a local anæsthetic depends upon the specific selectivity affinity of its base for nerve fibrils. But the different salts of such a base vary greatly according to the acid with which they are combined. If they are combined with strong acids (that is, those which dissociate electrolytically to a large extent), the salt is relatively rapidly absorbed into the general circulation and is less effective locally—that is, its toxicity is relatively high and its anæsthetic action relatively low. On the other hand, if it is combined with a weak acid which does not electrolytically dissociate to any considerable extent, it is relatively slowly absorbed into the general circulation and is more effective locally—that is, its toxicity is relatively low and its specific anæsthetic efficiency relatively high. Such salts have a high pH value.

2. A new group of local anæsthetics, the borocaines, is described, the members of which fulfil these conditions—that is, they are much less toxic than the original hydrochlorides, from which they can be prepared, but often exert more than ten times the anæsthetic action.

From *British Medical Journal*,—Notes by J. Stanley Bagnall, D.D.S.

Porcelain as Used in Modern Practice; Its Practical Application for Inlays, Crowns, Color Reproductions, Etc.*

BY ALBERT LELAND LE GRO, D.D.S., DETROIT, MICH.



O the experienced porcelain worker in dentistry, the practicality and the possibilities of the art have but to be emphasized to attain its proper status. To his mind there is nothing empirical about it; its position is fixed and secure, and all that seems necessary is to call to mind the position porcelain has occupied in one way or another since the actual beginning of dentistry as a profession. He has a feeling that without porcelain the practical restorative value of dentistry becomes purely mechanical and lacking in esthetic accomplishment. He knows that wherever this material is indicated, it is equal or superior to any other restoratives devised up to this time.

But the inexperienced worker, the dentist who employs this material only when he finds it absolutely necessary: What of him? Under this caption we have several varieties of individuals, all of whom still retain a subconscious element of doubt as to the possibilities of porcelain. There is always the dentist who discourages everything that he himself is unable to do and everything of which he knows nothing. He assumes that it could not possibly have any value because he knows nothing of it or how it is accomplished. Then there is the quantity-production dentist who never has time to perfect himself in anything. He attaches great importance to the fact that he is very busy, not realizing that it is impossible for him to render a maximum of service to any patient. This classification should include dentists without ideals worthy of note. They never do any one thing unusually well and therefore, occupy a rather drab position in the minds of all but themselves. There is another class that includes the types that really have no unusual ability, such as those who fear to start in this work, seeming to sense the fact that they would accomplish little should the attempt be made. Many of this class could, however, be made to do good porcelain work with proper enthusiasm, instruction and concentration.

There is also the laboratory "hound" who condemns or enthuses over a process of material to the exact extent that the laboratory succeeds or fails. He is usually the individual who demands most of the laboratory and has himself the least ability. This is not meant to include the careful discriminating man who employs a laboratory to carry out well developed ideas, but for the individual whose practice is limited

*Read before the Northern Ohio Dental Association, June, 1925.

by the laboratory he employs. Such a dentist would not recognize the necessity of porcelain in individual restorations. This material must, therefore, ever remain in the hands of men who appreciate its possibilities; those discriminating dentists who insist upon the artistic going hand-in-hand with all practical mechanical dental accomplishments. The esthetic sense demands that we make every honest effort to simulate as nearly as possible the natural composition, anatomy and color of lost tooth substance and at the same time secure a degree of permanence in the work. The desire for such accomplishment has found expression in the development of the porcelain art and the present-day fixed standards of indications and contra-indications in the employment of this material in the mouth.

It would, therefore, seem advisable that before the dentist took up the actual technique of porcelain construction, a thorough study of *limitations, indications, and precautions* should be made.

Limitations should apply not only to the material, but to the dentist himself. Porcelain is of course of greater value and can be used in a greater variety of situations if the dentist has unusual manipulative and engineering ability. As an individual restoration, it may be employed in inlays for the six anterior teeth, both proximal and labial or lingual; and as a cervical filling for all of the thirty-two teeth, the material has no equal. In rare instances it is employed in proximal and even occlusal cavities in the bicuspid and molars, but great care should be exercised in selecting cavities for porcelain in these surfaces of bicuspid and molars. As it is advisable to prepare all cavities for porcelain with walls at right angle to the enamel surface or nearly so, it will be readily seen that the general anatomy of these posterior teeth does not lend itself to such preparation. Only in cases of great loss of tooth substance is it advisable to place porcelain inlays in compound cavities of posterior teeth, and it would, therefore, seem wise to classify such inlays as exceptional.

Porcelain jackets, the only other form of porcelain restoration for individual teeth recommended, are indicated for the restoration of the entire enamel area of any of the thirty-two teeth, providing there is sufficient dentin surrounding the pulp to insure its health and retain the crown.

Porcelain may be employed either as an inlay or crown wherever the preparation will allow for sufficient bulk of material with proper angles to insure edge strength, and it is, therefore, suggested that the limitations depend as much upon the dentist as upon the porcelain itself, and naturally the *success* of a restoration will depend upon both.

This brings to us a *consideration of the indications and contra-indications* for the employment of this material as a restoration in the mouth, and affords a very interesting study of the *possibilities of porcelain*.

In superior third molars, porcelain inlays may be employed on the buccal and lingual surfaces, extending from deep cervical region almost to bucco- and linguo-occlusal angles. In approximal cavities or occlusal cavities in these teeth, porcelain is not indicated. If the cervical cavities extend to any part of the approximal mesial or distal surfaces, it is advisable to discourage the use of porcelain and resort to other material, owing first to the difficulty of procuring good impressions, and second the difficulty of making accurate inlays that are extremely concave on cavity side.

In the first and second molars, most cavities of usual outline, such as those not involving more than the approximal and occlusal surfaces, should not be filled with porcelain for two reasons; namely, first and most important, the contour and anatomy of these teeth will not admit of proper preparation for porcelain inlays in such cavity as described, and second, there is not sufficient bulk allowed to insure strength. If, however, a molar contains such a cavity progressed to the extent that it becomes necessary to remove a buccal or lingual wall in part or whole, or the progress of caries has caused the recession of the pulp and so much dentin has disappeared that a porcelain jacket preparation could not be considered, the indication is reversed. Such a cavity admits of preparation that allows great strength owing to bulk of porcelain. After cavities of this nature have been carefully prepared, impressions taken, amalgam die constructed and articulated, the inlay is made in the usual way, care being taken to bring the porcelain to a biscuit bake only. The great mass of porcelain in firing will pull away at one or more points in spite of every precaution. A new platinum matrix is made on the amalgam die, and after the matrix is removed from the biscuit inlay, the porcelain is seated in the new matrix and new wet porcelain is agitated around the baked porcelain until it appears on the opposite side, when the moisture is removed and the whole brought to a biscuit once more. It is now placed on the amalgam die and if the border adaptation of the porcelain is good, the material is ground if necessary to insure against excess, blown off with compressed air, and glazed in the furnace. Let it be remembered that it is only in construction of inlays of great size and bulk that the above technique is employed. Porcelain is also indicated in cervical cavities and all cavities on the buccal and lingual surfaces of these teeth.

For the bicuspid only cervical cavities should be attempted with porcelain. While it is true that many cavities involving the approximal and occlusal have been filled with porcelain and the teeth saved for many years, the fact remains that the general contour of these teeth demands such preparation that the borders of the inlay become chipped and rough, and aside from remaining there and preventing recurrence of decay, they are unsightly and inefficient. It is well to remember

also that the inlays such as described are the inlays that have survived and help us to forget the ninety per cent. that have proven failures in bicuspid teeth.

In the cuspids, especially the superior cuspids, the approximal inlay rises to great heights and shares with certain approximal cavities in laterals and especially centrals the designation as the most important locations for the porcelain approximal inlay.

Porcelain is always indicated in all labial and lingual cavities for the six anterior teeth.

Among porcelain inlay workers there always will be opinions widely divergent in regard to cavities involving the incisal angle in anterior teeth. It matters not how beautiful a porcelain inlay may appear in incisal cavities when first made and inserted, it is but a matter of time when most of them give a natural denture a decided patchwork appearance. The glazed porcelain does not, of course, change in appearance with the natural tooth substance which surrounds the inlay, and this, coupled with the fact that the thin film of cement, which occupies the space between the inlay and the cavity dimensions, oftentimes absorbs such pigments and stains that the food and saliva give forth, rendering in a few years, porcelain inlays which restore incisal angles, far from what we had hoped for originally.

For approximal cavities of sufficient size that do not involve the incisal angle, porcelain inlays probably come nearest to solving the problem of these cavities, when every desired and expected quality is considered. Unlike the incisal angle cavity, the border lines stain less frequently and when equally well done, perhaps are much less objectionable in appearance.

When these approximal cavities involve both the labio- and linguo-approximal angle, it is necessary that good separation must first be obtained in order that a good impression or good matrix may be secured. There are those who profess great success in obtaining good modelling compound impressions of these cavities, but the majority of porcelain workers adhere to the matrix making in the mouth, claiming, and justly so, that an impression cannot be drawn either labially or lingually when the opposite angle is involved. With a good separation, however, a most complex matrix may be drawn from the cavity without the slightest distortion. These are perhaps the only cavities for porcelain inlay restorations, however, that demand other than the indirect method.

If the approximal cavity involves only one of the angles, such as the approximal lingual or approximal labial so that an impression may be drawn either from the labial or lingual side, the indirect method is ideal and the work facilitated.

The color selection and production in porcelain will ever be one of

the most difficult problems for the ceramic worker. To make a solid porcelain tooth of natural dimensions and reproduce natural shades and hues, is very simple compared with the difficulty of producing and cementing to place a finished piece of porcelain inlay work that exactly matches the tooth in which it is inserted. In the first place, the porcelain entirely surrounds the preparation and in the case of the inlay the porcelain is entirely surrounded at the borders with natural tooth substance. This latter, together with the curtain of cement employed to fix the inlay in the prepared cavity, the angle of which may be just right to allow this cement to absorb the light rays, renders the problems of matching a cemented inlay into the prepared cavity, with the shade of the tooth, a rather difficult one. How often the dentist has stripped the matrix and placed the inlay in the cavity satisfied and delighted with its form and shade, only to be greatly disappointed later when upon cementation the inlay appears gray, bluish gray, or off shade. Experiments carried on over a period of several years established the fact in the mind of the writer that the cavity preparation must assume its part of the responsibility of the shade match in the finished cemented inlay. This hypothesis is founded upon three distinct observations:

First, All inlays made with fairly good match of shade retained that shade and matched the tooth after cementation with so-called silicate or enamel cement.

Second, Various cavities of the same class when filled with porcelain inlays and cemented with white opaque ceramic (oxyphosphate) cement, showed varied degrees of perfection in match, varying from the almost perfect to the dark gray.

Third, In a large number of cavities when the cemented inlay showed gray or dark gray, the border outline of the cavity was changed and in some the angle of the cavity walls altered. In these cavities were placed newly made inlays and cemented with white opaque oxyphosphate cement, the result showing a decided improvement, and in most cases the best hoped-for results obtained.

A deduction here necessarily involves a theory which until scientifically disproved must be accepted by all ceramic workers who must have had similar experiences. If porcelain inlays properly matched present varying degrees of perfection when cemented with oxyphosphate opaque cement, and most of them can be corrected by changing the cavity preparation either by border outline or angle of cavity walls, and if all inlays properly matched remain so when cemented with silicate or enamel cements which are translucent, the solution then seems easy. It therefore would seem wise to theorize thus: If the proper shades are employed and properly blended, a porcelain inlay will remain properly matched if cemented with an oxyphosphate opaque cement, the result

depending upon the correct cavity preparation to maintain that shade to the end.

The question is now very properly asked: Why not use silicate cements for setting porcelain inlays? Many dentists have experimented for years with different cements including the silicate cements and one specially prepared silicate cement for porcelain inlays. The results have of course never been compiled, but it seems to be the consensus of opinion that the silicate, aside from providing the translucency so much desired and thus retaining the shade of inlay after cementation, is of comparatively no value for permanency. The fluids of the mouth seem to dissolve the thin film of silicate cement more readily than the oxyphosphate cements. Recognizing the oxyphosphate cement as the best available for cementing porcelain inlays, it is well to remember that all oxyphosphate cements are not indicated for cementing these inlays. Only cements with uniformly fine ground powder are suggested, and preferably contain no pigment. The white opaque cement has been found of most value for obvious reasons, and up to the present time is the best thing offered. To depend upon cements of different shades is of little value. A gray cement for a porcelain inlay in a mouth of gray domination, or a yellow in a mouth of yellow domination, are neither as effective as the white opaque cement. It has been suggested that as there is some pink in all teeth, that an inlay set with a mixture of gray and a slight bit of brown to produce something akin to pink, makes the inlay appear more natural. In practice this theory has not proven of great value in many cases, though in the hands of the man by whom it was suggested it has proven highly successful.

All cavities for porcelain inlays should be cut so that the walls and floors are simple in outline. Avoid narrow arms or grooves extending from the cavity proper; a simple cavity with a groove or arm extending like a stage of amœba movement, renders the possibility of perfect adaptation of inlay more remote. Cavities of that nature had better be filled with some other material, unless the inlay is made by a very expert porcelain worker. All preparations for cervical cavities should contain a small round pit of identification so that the task of seating the inlay is facilitated.

Between the great things that we *cannot* do and the small things that we *will not* do, the danger is that we will do nothing.

Disappointment should always be taken as a stimulant and never viewed as a discouragement.

The Retrogression of Facial Prognathism, and the Present Result in the Human Race*

By E. A. THOMAS, D.D.S., HASTINGS, NEB.



It is known that man lived in Europe in the latter portion of the Ice Age, and it is quite probable in the earlier or later Pliocene Age. At least, his implements of stone were found among the remains of such animals as the cave bear and mastodon, and the man-like apes, now extinct, or the latter found only in modified types in the tropical regions. In a limestone cave in the Neanderthal, Germany, and in Java, and very recently in Africa fossil remains have been found of a man believed to be much more primitive than any other known. These fossil remains are regarded as an extinct species; and several extinct types of man have been discovered.

The great stride from the bestial to the human status, seems, therefore, to have been taken in the Pliocene period. Afterwards man relied on his brains rather than on bodily strength. Many characters which were at first indispensable in the Ice Age are found to have disappeared in the more advanced races of mankind, but the skeletal muscles and soft tissues of the human body offer evidence unmistakable of the former lowlier status through which his ancestors have passed.

There are two chief and distinguishing peculiarities which make plain most of the differences between man and other animals. These are the habits of standing erect, of walking in a more or less upright manner, and the greater size and weight of the brain of man. Almost all the differences in the skeletal framework and muscular arrangement of mankind may be traced back to one or the other of these two modifications, from the original four footed creature, with all its five digits exactly alike.

The primate ancestor must have soon begun to specialize. It is curious that in the lemurs we find sometimes a single digit modified for his special use, or in monkeys a distinction in the big toe or thumb, developed to suit his special needs. Such differences are, however, very slight when they are compared with the alteration of the skeleton required by the erect position and gait of mankind. The head had to be poised or supported on the vertebral column, not slung on in front of the animal. All modifications necessary for this are the results following engineering necessities of the habit of standing or walking. They are the effects of a changed habit.

*Read before the Section of Biology and Medicine, Nebraska Academy of Sciences, Lincoln, Neb., May, 1925.

The great size of the skull is perhaps the most important characteristic of man; yet in order to balance the head more effectively, the length of the head is small compared with the length of the body. As an infant grows up, the relative length of the head diminishes greatly. In young babies it is about one-fourth of the total length, but in full-grown Europeans the total height is from seven to eight times the head length.

The most remarkable of all the differences between man and his nearest allies in the animal world lies in the shape and extraordinary development of the skull. It is interesting to note that in the human infant, even at the early period, the bones of the nose and cheeks are overshadowed by the forward growth of the forehead and temples. But though this difference is clearly to be recognized, there are stages in which the form of the skull is at first more narrow and low in front and wider behind, the upper jaw projects forward and is heavy looking (Prognathic) like that of some negroes. The nose is at first broad and flat like that of a chimpanzee or orang-outang and of many low-cast savages. Indeed, the general resemblance of a youthful human skull to that of a young orang-outang is striking at first sight, but soon becomes less distinct. In early youth the skull is always more broad than in the adult; women also have usually rounder heads than men of the same race. The same rule seems to hold in the primate order both for monkeys and higher apes. Many primitive races of mankind as well as the Neanderthal, or glacial man, were longheaded. But there are also primitive round-headed men. The head of both probably would be low and broad as compared with modern races. Nose would be as broad as it was long, high nostrils, wide apart, and facing a little upwards and outwards. The bridge almost concave upwards. He had no real chin and a very retreating lower jaw, a long, narrow, as well as projecting or prognathic, upper jaw, heavy cheek bones and extremely large teeth often with five roots, very long, set into very deep and wide alveolar bone tissue. The muscles were enormously developed from chewing hard food and those used for speaking were feeble and weak.

The Neanderthal face as well as other primitive faces was broad, strong, and bony projections over the eyes were continued sideways along part of the outer edge of the eye orbit. His nose seems to have been short and broad, with the bridge so to speak curving upwards under his eyebrows. His nostrils were wide and open upwards, the chin in most cases was retreating from a long heavy protruding lower alveolus and teeth, and the teeth and alveolus of the upper jaw the same; and in all cases the teeth are large and increase in size backwards towards the wisdom tooth. They are usually worn down almost to the roots. The jaws in most cases are heavy and massive, with

powerful muscles corresponding to the severe effort required in masticating the food of his time. There is also a very marked prognathesis of the upper jaw projecting beyond the line of the forehead, so increasing the bestial ferocity of the appearance.

From the size, shape, and form of these primitive skulls we can determine the muscular characteristics and we would arrive at the conclusion of many evolutionary changes in these. The nose and chin are less prognathic than the teeth and alveolar process, in order that they might not be in the way of the teeth in use as defence and securing of food. We also would expect that the orbicularis oris muscle and lips would be made up of loose connective and adipose tissue, and very wide because of depth of alveolus and teeth, and extending laterally and distally, making a large vestibular opening to the oral cavity, and that the levators, levator angulars zygomatrics of maxillary region, with the levator mentis, and depressors of the mandibular region all longer and larger because of the extreme length in prognathism made capable the exposing of a large number of teeth and their alveolus for use. This condition also, with the exceptional wide and deep rami of the mandible and its coronoid process, made it possible for a large efficient masseter and temporal muscle, but with a buccinator not so necessary as at present, thus of smaller size and attachment.

To illustrate these changes in the face muscles let us compare a mature gorilla or orang-outang skull with that of an adult human being. Two differences are specially remarkable. The great forward projection of the face, massive in the adult male. The lower jaw heavy, and molar teeth very large. Imagine the young gorilla chewing his food and manipulating these relative large jaws. As soon as these muscles begin to exercise full activity, they obviously require a solid bony attachment and hence the attachment must be well set upon the head in such a position to get a direct pull in line of occlusion which could not be gotten lower down in the face; but as the long, narrow jaw of a gorilla-like ape changed in consequence of the broadening of the skull and the shortening of the face into a shorter round-arch shape, then great strain and stress-tensions would be thrown on the extreme forward points of the jaw bones. If the origin of bone-forming tissue may be due to muscular stresses and strains, then the production of bone-forming tissue at this point would be favored as soon as the human round-arch-shaped jaw bone was produced.

The formation of a chin was clearly a mechanical advantage. While this retrogression of the maxilla made it necessary for the accommodation of proper nasal organs and the mesial prognathic extension of the modern nose, so that instead of the pronounced prognathic convexity from the nasal tip to chin tip we have in its stead a striking concavity.

It is not necessary for us to go back and worry about the proof of man's ascent from the anthropoid apes or the missing links, which may have taken place thousands of years ago, to prove that biologic nature is changing and adjusting her creatures according to their habits and environments and under pressure of new conditions of life, they change proportionately. We have but to call your attention to marvellous changes of plants brought about through the biologic plant wizard, Mr. Luther Burbank, and we have only to visit and compare the lower-grade domestic animals with those of the high-grade thoroughbred to see what a marvellous change can be brought about in a very short time; and we have only to remember that the same biologic nucleated cells through which they exist and function are the same kind of biologic nucleated cells through which we exist and function. No matter how lowly that animal or plant life may be the same vital phenomena are present. The great changes in species are developed through the embryological unfolding phenomena in their neutralization within nature's great chemical laboratory, the product depending upon the biologic elements in the seed and its environmental laboratory surroundings. The higher the development the greater the compound-complex neutralizing, until we have man, the highest biologic type, significant and distinct in that he walks upright, balancing upon his spine the largest brain, the seat of the greatest psychological phenomena. We have the same sun and earth with its physical and chemical laws, the same sky and planets that primitive man and animal had.

The embryological, anatomical, physiological, and psychological laws are always changing to meet their needs in their neutralizing to nature's laws; thus the constant change.

In considering the evolution of the face, its oldest part is the mouth. The primary business of the face was to direct the mouth towards the food; thus the prognathic face at a time when the prognathism of the teeth and alveolus with a receding chin and nose, were more convenient.

The chin and nose did not interfere in this way with his gnawing from large chunks of food, but as he invented tools with which he could cut his food into small parts and fork it into his mouth, the vestibule and port to his teeth became smaller, and the nose and chin more prominent; and as he grew commercially he began to devise all kinds of food-mills to grind it, which requires less mastication; thus the smaller tooth roots and alveolus as well as jaws. The crowns of the teeth as organs for traumatic rest for jaws as well as for mastication have not receded in size in proportion to roots and alveolus. All authors seem to agree on this hypothesis, although definite scientific proof is lacking, because of the inadequate equipment and incomplete tabulation of former researches.

The significance of this condition readily can be seen when we con-

sider the embryology and development of the teeth in the jaws. With their parabola of alveolus reduced in excess of a like reduction of the parabola of the tooth crowns, and the significance of the tissue and procedure of development of the jaws, face, muscles, alveolus, crowns and roots as a whole, and with each tooth and alveolus as a distinct entity, we realize a pathology must exist. We must also remember that in this phenomenon two sets of teeth must be considered. With the first, however, we can see but little or no pathology resulting from this evolution, but in the second we see a marked pathology. In the chronological order of the development, time of budding and procedure in development of the teeth, focuses the significance to the third molar. Its germ is given off at the late age of three years and regardless of the significance of the phenomena in its development, and that of its alveola as distinct or combined entities, it meets with a remarkable condition in that the crowns of all the other teeth are fully decalcified at the time its crown begins at nine years of age. And at this time the face muscles and jaws are well completed and in this the third molar must take for itself a location and position of what may be left in the arch. It many times is crowded partly or entirely in a territory foreign to it, or not intended for its occupancy.

In this it readily can be seen, as a distinct entity occupying a foreign position, it becomes a non-functioning organ, occupying a position intended to be occupied by other functioning tissue; thus this tissue is distorted in its position and in this, many times at least, its function must be impaired.

Whether the tooth and its alveolus or the tooth itself is a distinct entity, the fact remains that owing to its germ given off and very late decalcification, the nature and position in the jaws at this time goes far in explaining its distorted position as to its relation to other teeth in the arch, and lack of proper development, irregularity and mal-position of its roots as relates to its crown and alveolus. The position of the germ as it is given off determines the angle of the developing crown in the jaws, and the developing crown should determine the angle of the developing roots, in the jaw, but when roots meet a resistance in their development they diverge in the course of least resistance. This is true whether the crown fully erupts, partly or fully fails to erupt, or becomes impacted in its course of eruption.

Inasmuch as the tooth development and its investing tissue have not satisfactorily been explained, the pathology above mentioned may or may not have a grave significance in the mental and physical welfare of the human race; but considering the nervous and systemic manifestation of the erupting deciduous teeth, and the many disturbances in the permanent teeth, infections and traumatic manifestations of the teeth and alveolus of a normal sized jaw with plenty of room, would

lead us to believe that a multitude of remote mental and systemic disorders might result even though thousands of practical and technical evidences had not been recorded.

As to the third molar becoming an extinct organ we are not able to say, with the unsatisfactory recorded investigations, but it is our purpose to lay a foundation at this time wherein future investigators may determine definitely this surmise.

We are of the opinion that the thousands of nose, tonsil and sinus infections, distortions and abnormal growths at this time, are only other manifestations of a critical anatomical and physiological status in this facial retrogression, and it is also our belief that we are just now at the peak of a rapid change, and that nature in her slow progress has been unable to correlate a compensation of other organs to meet this condition.

Teeth or Diamonds

ON QUIXOTE exclaimed after an unfortunate event in which he lost a number of teeth, "Alas, a tooth is more precious than a diamond." In the light of modern preventive medicine we can hardly regard his exclamation as an exaggeration, thinks an editorial writer in *The Modern Hospital*, who says:

"Teeth are more precious than diamonds, and he would be a fool who would swap his thirty-two teeth for a like number of diamonds, whatever their carat. Investigation shows that 90 per cent. of our school children have one or more decayed teeth, and that 20 per cent. of all the teeth of school children are in a more or less serious state of decay. This is a grave national indictment in view of the progress that scientific medicine has made in recent years, and in view of the fact that dental caries, its cause being well known, is theoretically preventable. When, however, hospitals, especially those for children, inaugurate clinics to care for the dental needs of their in-and out-patients, we regard it as a matter of real encouragement.

"The importance of the dental clinic in the hospital is becoming increasingly recognized. We earnestly hope that in the near future many forward-looking hospitals not yet equipped with dental clinics, will begin to lay their plans to install dental clinics.

"Some day, and let us hope the day will not be long deferred, we, as a nation, will spend the initial forty or fifty million dollars needed to put the teeth of our children in order, and the additional thirty or forty millions annually to keep them in order. It will be one of the best investments the nation ever made. It will save many millions more, and will add richly to our national health and efficiency."

The COMPENDIUM

This Department is Edited by
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THE LESSENERD POPULARITY OF DENTISTRY AS A PROFESSION.



OR a few years dentistry attracted the attention of a large number of young men, and indeed many women also, who anticipated a professional career. For a time, especially during the war-period, dentistry held a leading place as regards the number enrolled in the various faculties of our Universities. Times have changed, however; our classes in dentistry are but a fraction of those enrolled four or five years ago.

There are many reasons offered by way of explanation of this new condition. We are told that in Canada the profession is over-crowded, and there are many evidences supporting the correctness of that statement. In a notice sent to all dentists in Ontario by the officers of the Ontario Dental Association this observation is made:

"Many dentists in Ontario are working less than fifty per cent. of office hours and others have been forced to leave the Province because of scarcity of patients."

It is obvious, therefore, that the profession is over-crowded in this Province.

Again, the requirements for matriculation have been raised and the course has been lengthened; both, no doubt, having an effect upon the number of prospective students of dentistry. It is difficult to predict just what effect the new 1927 standard of honor matriculation will have upon the number entering Faculties of Dentistry.

In England there is some concern regarding the lessened popularity of dentistry as a profession, as evidenced by the reduced number of students taking the course. Fewer young men are taking up the career of dentistry than heretofore, and it is expected that the number registering will be even less in 1926.

Regarding the situation in England, The Dental Register reports in part as follows:

"An official of the Dental Board, which occupies a position towards the dentists similar to that which the General Medical Council holds towards the medical profession, said that the matter of recruiting young dentists was regarded with concern by the Board. At a time when the need for skilled dentistry was becoming more than ever recognized, when increasingly the dentist's attentions were being sought for small children, when the public generally were becoming more enlightened on the need for healthy teeth, it was essential that the supply of efficient dentists should be kept up from year to year."

To remedy this possible shortage of dental assistance, the Dental Board have allocated for three years a sum of approximately £7,500 for the purpose of educational grants. In this way valuable bursaries will be available to students. For some the grant may be sufficient to cover all the tuition fees for four years. There is also a provision for essential books and instruments, microscope, dental engine and other necessary equipment. Where necessary a grant will be made towards maintenance during the course of training.

The outlook for such students of dentistry is rather promising. Upon graduation they will not be faced with the task of paying off accumulated debts whilst trying to establish a practice—an undertaking which under prevailing conditions is almost impossible of accomplishment for the average beginner in dentistry. Indeed the solution of just such cases is provided for, in part at least, by the Dental Board in this way: In order to obviate the necessity of the beginner entering into substantial obligations for equipment, etc., he will be allowed to retain a portion of the tools and instruments provided for him during his student course.

The contrast of English and Canadian dental curricula affords interesting study, and the future of both will be watched with much interest by all students of dental education.

SUBSTANTIATION OF THEORIES BY FACTS.



T is often said that the true test of education is the power of judging evidence. From this premise one might conclude that a good education enables the individual to form true judgments, whilst inaccurate deductions are the heritage of poor educational standards.

The retention of a theory that has been proven faulty or inadequate by determined facts is also an attribute of deficient educational methods. In all professions, including our own, we may often find that old theories, which in the light of newer knowledge may properly be designated as antiquated, are retained and included in the curricula of

studies. Dentistry has fallen heir to many poorly conceived hypotheses. As the ocean liner regularly enters dry-dock to effect the removal of barnacles from its keel because they are a hindrance to progress, so the dental profession or, for that matter every profession, will improve its position through abandoning methods of teaching or practice that have been judged untenable.

Among the many and varied theories taught regarding the causation of dental caries is the popular one that the eating of tough and fibrous foods will effectively prevent the destructive action of caries, and to prove that this theory is a correct one we are referred to the savage or semi-savage races in various remote parts of the world—the more difficult these people are to reach the better teeth they seem to possess. The teeth of such people, we have long been told, are preserved in a state of pristine perfection because the food consumed is always coarse and fibrous; hence requiring much mastication.

We have often wanted to know where these natives secured this kind of food and whether any of the authorities on the subject of diet had really secured this information about the food habits of natives through personal inquiry. A sense of propriety forbade the making of such an inquiry, and so the theorist, ensconced in his comfortable fire-side chair and fortified with the knowledge that his living examples are in remote and inaccessible jungles, goes on expounding theories and overlooking facts.

The sincere searcher after truth will never be satisfied with anything less than the actual facts, and these he prefers to secure first hand. Such men are the scientists of to-day, and to them must we look for real guidance in our attempts at solving the dental problems now confronting us.

The life-habits of many, and indeed most, of the primitive tribes are known because of reports published by explorers and others; but it is only during recent times that the problem of the preservation of the teeth has received the attention that it deserves. Hence the ground must be gone over again with this new objective in view.

Judging from the accounts given by many impartial investigators who have lived among the native tribes of Fiji, New Hebrides, Tahiti, and Papua, we learn that the food used is of a type most likely, according to our theories, to produce dental caries, yet these people are noted for the excellence of their teeth. The native repast, we are told, is not masticated even as much as an English meal, because there is less to chew. With some tribes the staple food is cooked yam, which requires little mastication. Everywhere there is an absence of tough and fibrous foods which require chewing. Children, and even adults, use large quantities of boiled fish, and when offered the crusts of white

bread refuse it because it is "too hard" to masticate. One of the best informed writers on diet and its relation to tooth structure, commenting upon the food habits of the natives of South and West Africa, also Ceylon, says:

"I have personally investigated the food and critically watched the masticatory process in the native children. There are three outstanding things which at once strike one in each and every place: (1) The absence of 'tough' food, it being mostly what we should call soft, with occasional hard and crisp substances; (2) the straight up and down movement of the jaw; (3) the large mouthfuls taken, and ease and rapidity of deglutition."

In the light of present knowledge of the food habits of these primitive people, it is time that our theories regarding the relationship of mastication and dental caries be revised. Theories must be recast in alignment with the facts as we have them to-day.

PULP PRESERVATION.

 HERE are many cases where it is deemed advisable to preserve the pulp of a tooth, but where decay has encroached so close to the pulp that the removal of the decayed material will probably result in pulp exposure. Various methods have been given by which the vitality of the tooth may be maintained, and many of these have proven satisfactory.

The Dental Summary, in its August issue, suggests the following procedure: Having adjusted the rubber dam, swab the cavity with phenol and dry. Eugenol is next applied, and without drying all decay is removed from the walls of the cavity, using small round burs, Nos. $\frac{1}{2}$ or 1, revolving bur slowly, and with gentle touch, until all decay is removed from the cavity walls, and as much as possible from over the pulp without causing an exposure. Eugenol is again applied directly over the pulp by means of cotton twisted about a broach. This is done to cause the protecting paste to adhere more closely, and also for its palliative action.

A stiff paste of eugenol, magnesium and zinc oxides, with silver nitrate, is preferred where there is much decay remaining in the cavity, and where there is no danger of irritation from the silver nitrate; otherwise a paste of magnesium oxide and zinc oxide with eugenol is used. These pastes are applied with a suitable exploring point, being carried to the particular area and gently placed there without coming into contact with the cavity walls or margins. Should contact occur there is a likelihood of the sealing cement not adhering properly. Calxine, or some similar cement, may be used to flow over and seal in the paste.



PUBLIC HEALTH SERVICE

FOR THE PEOPLE ~ BY THE STATE

This Department is Edited by
FRED J. CONBOY, D.D.S.

Director of Dental Services, Province of Ontario



Ontario Dental Health Day



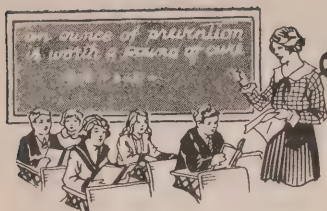
THE Ontario Dental Health Day will be held on Wednesday, October the 20th, 1926. The Ontario Department of Health will take a prominent part in organizing this great public health movement, and many other organizations have promised to assist. The real leadership must, however, be provided by the members of the dental profession. Every dentist will admit that such an educational effort is an absolute necessity, that the vast majority of parents are not making a serious effort to provide dental treatment for their children, nor are they greatly concerned in regard to the condition of their own mouths. We are also convinced that we cannot expect to have a real improvement in public health, in so far as the diseases occasioned by focal infection are concerned, until the people realize that dental infection must be eliminated. In a recent address, Dr. W. J. Bell, Deputy Minister of Health for Ontario, referred to the dental branch of the Department of Public Health, and said that dentistry had now come to be recognized as a major factor in public health. He stated that recent researches in medicine, and particularly in the field of focal infection, had disclosed the fact that septic foci in the mouth had been the cause of an astonishingly large proportion of illness. Dr. Bell strongly emphasized the health protection and disease prevention aspect of dentistry, and cheered the profession by expressing, on behalf of the Minister and the Department of Health, a hearty welcome for the profession of dentistry in the public health field.

Unfortunately, many of us under-estimate our privileges and responsibilities. We feel that our work is not of great importance, and if we endeavor to assert ourselves or take the initiative in any dental health movement our motives will be misunderstood, and people will think that we are trying to build up a practice. The people to-day are looking

for advice and leadership, and they are willing to accept the counsel of men in whose ability and integrity they have confidence. Of course there are always a few disgruntled, cynical individuals who can see selfishness and meanness in anything, and the more altruistic and constructive the work, the more prone they are to find fault. But these people are well known in every community, and their opinions carry little weight. The great mass of the people will gladly accept and act upon advice given by members of the profession in so far as their financial condition will enable them to do so. Every dentist has a responsibility to the general public. It is our duty to warn the people that their health will be imperilled and their lives endangered unless they protect themselves against dental infection. The people must be told how to prevent dental diseases, and the dentist is the only person who can give this information. We cannot evade our responsibility in this connection. The providing of treatment for those who cannot afford to pay a reasonable fee is an obligation which rests upon philanthropic organizations, the municipality and the state, but the educational work must be done by the profession. We must not force the physician to do the work which belongs to us. The Department of Health is willing to do its full share. Will we measure up to our privileges and responsibilities? We must plan now for public addresses before service clubs and other organizations; get in touch with our local newspapers; arrange for the publication of dental health articles; organize a local committee composed of the medical officer of health, the school authorities, public and school health nurses, dentists and other interested parties, and arrange the special activities for October the 20th next!

VULCANITE REPAIRS.—When the pink gum is fractured, it saves a lot of time to dry pack the pink rubber into place, using the wax knife attachment on the switchboard as a packer. It can be kept warm for any length of time, and the gum can be literally waxed up with the pink rubber, the subsequent difficult operation of boiling out the wax from the inaccessible part of the investment being avoided. This method is very useful when the plate has gum sections adjoining the fractured portions. In this case the palatal portion of the plate can be packed with the stronger red rubber, as it cannot possibly displace the pink rubber already in place. In most gum section cases, the plate is weak at the portion behind the blocks, as the mechanics seem to have a horror of getting red rubber behind the sections. On repairing these cases, the plate can be made much stronger by replacing this pink rubber with red.—*Dental Science Journal of Australia*.

The real secret of beauty is to have a spirit free from all ugliness.



School Dentistry

This Department is Edited by
EDMUND A. GRANT, D.D.S.

Director of Dental Services—Department of
Public Health, City Hall, Toronto



We are anxious to receive for publication in this Department reports of work carried on in School Dental centres anywhere in Canada. Papers on any phase of Pedodontia would also be welcome.—E.A.G.



HE dental profession of Hamilton, working in co-operation with Dr. Conboy, have recently completed a voluntary survey of the school children in that city. The results of their work are shown in the following table:

Number of children examined	18,692
" " " without defects	1,756
" " " with defects	16,936
Percentage of children with defects	90.6
Defects in permanent teeth	29,286
" " deciduous teeth	22,336
Total defects	51,622
Defects per child (average)	3.04
Children with mouths in a septic condition	666
" " badly inflamed gums	174
" " irregular teeth	1,511
" " unclean mouths	9,352
" whose mouths showed evidence of previous dental care....	3,777
Percentage receiving dental attention	20.1

Some very bad cases were reported.

These figures show that there is considerable work to be done by the family dentist and the school dental service before conditions can be improved, but from the splendid public spirit that the Hamilton dentists have always shown, and especially in freely giving of their time to make this survey, we know they will be equal to the problem. In fact, Dr. W. G. Thompson is already giving his time, without salary, to supervise the school dental service, and Dr. George Everett conducts half-day extraction clinics without remuneration.

Dr. Conboy reports that he has been greatly assisted in his work by voluntary dental surveys having been made in a number of communities throughout the province. A few of them are:

Dundalk—By Drs. H. G. Marshall and S. C. Sudden.
 Lansing and Newtonbrook—By Drs. C. W. Soules and W. W. McDowell.
 Mimico, Mount Dennis and Lambton Mills—By Dr. D. Hindson.
 West Oxford (7 schools)—By Drs. A. H. Wilson and N. S. Douglas.
 York Township (3 schools)—By Dr. J. H. Conboy.
 Kingsville—By Dr. J. A. Rumball.
 Metcalfe Township—By Dr. R. A. Willmott.
 East Kent—By Dr. M. J. Hooley.
 Lucan—By Dr. N. Clark.
 Ridgetown—By Dr. T. A. Ramage.
 Essex County—By Drs. T. D. Campbell and R. R. Hudgins.
 West Lorne—By Dr. J. McPaterson.
 North York—By Dr. A. O. Parry.
 Hastings—By Dr. G. A. Stewart.
 Forest Hill—By Dr. A. R. Firstbrook.
 Willowdale—By Dr. S. B. Hambly.
 Melancthon and Osprey, Grey County—By Dr. H. G. Marshall.
 Rodney, Elgin County—By Dr. A. C. Steele.
 Plympton—By Dr. C. L. Huffmann.
 Four schools (York County)—By Dr. R. R. Whitaker.
 Mimico—By Drs. W. J. Hall and G. C. Mackay.
 Alliston—Dr. W. A. Fleming.
 Corbetton—By Dr. J. H. Zinn.

Space would not permit to give all these reports in detail, but, as they are all rural schools, a tabulation of them all will give some idea of dental conditions among the school children in the smaller communities throughout the Province of Ontario:

Number of children examined	9,136
" " " showing previous work	1,547
Using tooth brush	4,146
Defects in permanent teeth	7,922
" " deciduous teeth	6,867
Indications of periodontitis	315
Needing correction (orthodontia)	673
Thorough mastication possible	2,043
Septic conditions (pus, old roots, etc.)	3,351

A number of other surveys are under way, complete reports of which have not yet been received. It is hoped to publish this information at a later date.

First International Orthodontic Congress



THE First International Orthodontic Congress will be held at the Hotel Commodore, New York City, August 16th to 20th. This Congress will be participated in by leading Orthodontic Societies of Europe and America. A programme of unusual scientific importance is being arranged.

Members of the Dental profession who do not belong to the affiliated Orthodontic Society can obtain membership in the Congress by becoming subscribing members.

DR. WILLIAM C. FISHER, *President General*.
 501 Fifth Avenue, N.Y.C.

DR. WALTER H. ELLIS, *Secretary General*.
 397 Delaware Avenue, Buffalo, N.Y.

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MARITIME PROVINCES.



THE monthly meeting of the Halifax Dental Society was held on December 8th. Dr. J. H. L. Johnstone, Professor of Physics, gave a paper on x-rays. He dealt with the early history of their development and explained how they were generated. An interesting point made was that the chief reason for the high cost of the Coolidge tube lies in the technical difficulties associated with obtaining the high degree of vacuum required.



Dr. Angela Magee Moriarity (Dal., 1924), daughter of Dr. J. M. Magee, of St. John, is in charge of a pre-school-age clinic in Suffolk, Virginia.

Dr. Barrie Shaffner (Dal., 1924), who has been in attendance for some time at the London Dental Hospital, London, England, has been awarded his L.D.S., and is commencing practice in London.

Dr. G. S. MacDonald (Dal., 1925), is relieving in an office in Courtenay, B.C.

Dr. H. W. Black has given up his practice in Sydney, C.B.

Dr. V. C. Clifford (Dal., 1924), has moved from Baddeck, C.B. to Sydney.

J. S. B.



QUEBEC.



THE regular meeting of the Mount Royal Dental Society was held at the Mount Royal Hotel on the 15th of October, 1925.

Dr. J. S. Dohen was the speaker for the evening, having been assigned the subject of Dental Office Management and Economics. He warned the young practitioners against the get-rich-quick method

of investment, saying that dentists and physicians are reputed to be the best "suckers" for the brokers.

He outlined the methods by which he conducts the economic part of his practice, and many valuable suggestions were gained by the members. A hearty vote of thanks to the speaker was passed before adjournment

* * *

Another regular meeting of the Mount Royal Dental Society was held on Thursday, November 26th, 1925, at the Mount Royal Hotel.

An excellent table clinic on Full Denture Construction was given by Dr. F. Mendel and Dr. N. Titleman, who showed many fine models. Dr. Titleman demonstrated with models the all-compound technique for impressions without metal trays. Dr. Mendel followed by demonstrating how to take the centric occlusion, how to obtain the rest space, mounting on the Hanau articulator and setting-up of teeth.

Dr. Titleman also demonstrated the use of the Twentieth Century Snow Articulator as being an adaptable articulator, and showed how to tin-foil and pack. Dr. Mendel demonstrated how to grind-in the dentures after vulcanization.

The President announced that Dr. Mendel had agreed to carry through a practical case of full denture at his office for the benefit of the members. After a vote of appreciation to the clinicians, the meeting adjourned.

I. N. P.

* * *

ONTARIO.

ORAL HYGIENE COMMITTEE OF THE ONTARIO DENTAL ASSOCIATION.



THE Committee met on Thursday, 12th November, 1925, when it was reported that the Ontario Dental Association had placed the sum of \$500 at the disposal of the Committee. The posters submitted by Dr. Conboy were approved, and the Committee was assured that the Provincial Department of Health would provide suitable dental films.

It was decided that a letter be forwarded to every Dentist in the Province, urging co-operation and the devotion of more time to the dental needs of children. The two booklets on the care of teeth were referred to the sub-committee for revision.

Lantern slides were submitted by Dr. Conboy and approved. The Committee sanctioned the purchase of the necessary sets.

The activities of the Committee being not limited to work for children, it was decided to co-operate actively in the work being carried

forward in provincial institutions and industries, and Dr. Robb was appointed to discuss with other exodontists the possibility of arrangements being made whereby impacted teeth might be removed for patients in provincial institutions.

W. G. T.

* * *

MANITOBA.

DR. HERMAN MAVES, of Minneapolis, had his first deer hunting trip this winter in Manitoba, going out with Drs. Les. Bannerman and Howard Merkeley, of Winnipeg. He is now known as "Herman" to several of the boys here. You should hear him tell of his experiences, including his real thriller. It's too good not to tell as much as can be put in print. The missing details can be imagined, or, better still, ask Dr. Maves. It seems that one evening everybody ate liberally of the wonderful old standby—prunes—now elevated to a still more honorable position by our increasing interest in diet. The next morning Les. and Herman had walked a couple of miles when—well, they were good prunes. Seeing a moose running by, Les. grabbed his rifle and snapped a shot at it, wounding it. The enraged moose charged straight for Dr. Maves, who was in no condition to run. He had his rifle in hand, but did not realize his situation until Les. dropped the moose within a few feet (actually) of Herman, and what might have been a serious matter ended in a thrilling experience. Les. had his moving picture machine along, but no time to use it. Besides, it is doubtful if the censor would have passed it. Some unkind party claimed that Howard saw what was happening from a high stump a mile away, and that it was really Howard who saved the day. I don't believe it, though I know Howard is a crack shot. Les. admits he fired from behind a tree at close quarters, and I'm sure it was he who did the trick. Others claim the physiological action of the prunes was made permanent. I don't know. Anyway the party got the bag limit and we are all mighty glad no mishap came to Dr. Maves. Later—C.K.Y., Winnipeg—Dr. Bannerman says the white outside hunting suit required by law should not be constructed like overalls. He knows why. Good Night!

* * *

Dr. Geo. Fletcher, Eye, Ear, Nose and Throat Specialist, Winnipeg, appeared before the Winnipeg Dental Society at their December meeting. His subject was "Foreign Bodies of Dental Origin in the Lung and Bronchi." This will appear shortly in ORAL HEALTH, as it is a very important matter of which little has appeared in print. Watch for it.

* * *

The cost of dental supplies is a question I have not attempted to discuss in these columns, but an incident such as I had to-day "gets my goat." I wanted a new water hose piping from the floor plate to my Weber cuspidor. My assistant ordered it, and it came over with metal connections mounted ready to attach—price \$7.00. I enquired of both supply houses whether I could not get the rubber hose only, without metal parts, as mine were O.K. I could not, and was informed it made little difference in cost anyway. Seven dollars seemed out of all reason for five feet of hose connection. I went out to a rubber manufacturing company, secured the same make of hose, except for the cotton sheath, for forty cents, mounted the metal parts and saved \$6.60. It cost me 40c. instead of \$7.00. It's exasperating to think of the extreme prices we are asked to pay because we do not take the trouble to investigate. Then when we have something to sell the dealer we need to watch out too. A year ago I sent some gold scrap to a dental supply house, asking for cash returns from the refiner. By mistake they weighed the gold up and sent me \$25.10 cash from their own office. I sent it back and said I wanted cash returns from the refiner. In a couple of weeks I got a cheque for \$29.30 from the refiner. I'm not accusing the dealer of crookedness. The managers and staff of the depots in Winnipeg are as honorable men as one will meet in any business; but I am raising the point that we dentists are too easy-going in our buying and selling.

I was telling the above incident to a brother dentist to-day, when he gave me the following experience which occurred to him yesterday. An itinerant dealer weighed up his scrap gold and remarked: "Doctor, you have as fine a lot of scrap gold as I have seen for some time. It's good. It weighs 122 dwts." He then figured the value and, drawing out his money, proceeded to pay for it. At this point my friend said: "How many pennyweight did you say there were?" "There is a lot of it; there are 122 dwts," he replied. "That's funny," said my friend, "there should be 136 dwts. 14 grs." The dealer said, "Well, I'll take your word for it and pay you at that." "I do not wish to do business with you at all," replied my friend, and dismissed him from the office.

* * *

Mr. Phil. Jamieson, of Ash-Temple Co., Toronto, paid a business visit to Winnipeg in December, and many of his old friends had the opportunity of seeing him again.

W. W. W.

ALBERTA.



THE following report by Dr. Leslie McIntyre, Secretary of the Alberta Dental Association, is a clear statement of a case of great interest to the dentists of Canada, which it is hoped has been fought to a conclusion in the Courts of Alberta. Dr. McIntyre is to be congratulated on his energy and perseverance, which have contributed to no small extent towards this successful outcome.

"The Alberta Dental Board feels that in this report is told the story of one of the most determined efforts to combat the Dental Laws that has ever been recorded in Canada. There are phases in the struggle that are unique, and to one who has taken an active part in it there came the feeling that the law-breaker really never got the idea that he had no right to practise dentistry, and upon the contrary actually felt that a gigantic trust was squeezing him out of a monopoly.

"One Wm. Lees, by name, was acting as a semi-janitor, semi-laboratory man, in the office of a man registered under the old N.W.T. Dental Act, and so acquired a very limited working knowledge of rubber plate work only. Establishing himself in his home as a laboratory man, he 'picked off' an occasional plate for himself. Liking the taste he bit off a little more, until by the time the Edmonton dentists became aware of it, 'Dr.' Lees had an extensive plate practice, with his own laboratory assistant, who, being somewhat versatile, acted as 'tout,' in his spare moments visiting refreshment parlors and elsewhere to entice the unwary edentulous to where they could obtain a 'cheap' denture.

"Lees was convicted and fined \$50.00 and costs as his first offence in Oct., 1924. Consigning the Dental 'Trust' to an unmentionable place, he at once went back to work. Telephone messages were sent to the Secretary of the Board in black-hand fashion, that should he move against Lees again he would 'get his' and get it right.

"Early in 1925 Lees was fined \$400.00 and costs for a second offence. Terribly riled, he carried an appeal to the Appellate Court. Just here we can quote a valuable precedent for dentistry in the Cruickshanks case of 1914 (Appellate Div. Alberta Law Courts), in which the written decision includes a clear definition of dentistry; namely, that one taking an imprint of gums and making therefrom a denture is practising dentistry; and that two or more sittings on one patient constituted continuous practice. In Lees' appeal the Appellate Court merely referred him to its earlier decision and confirmed the fine of \$400.00. Lees went back to work.

"In September, 1925, Lees was given a third fine,—again \$400.00. Calling all and sundry to witness how he was going to tear the Alberta Dental 'Trust' up by the roots, and then some, Lees launched another

appeal. Skilful manœuvring this time brought his case before a single Judge of the Supreme Court, namely, Mr. Justice Boyle. Now we can safely say we here can quote our most unique feature. The evidence consisted of the exhibit of a full upper and lower denture constructed throughout and fee collected by Lees himself, with about six visits in all. Yet Judge Boyle ruled this was insufficient evidence to convict on, and that plate work wasn't dentistry any more than making a wooden leg was surgery. It will suffice to quote this decision; comment is impossible.

"Members of the dental profession can appreciate the feelings of the Alberta Dental Board. The decision created what amounted to an impossible situation for every practitioner in the Dominion. An appeal was immediately launched, with the determination to see it through to the end. On December 3rd, 1925, the arguments were heard before the full Appellate Court. It didn't take the judges long to quote their own decision, reaffirm the magistrate's fine, and tell Mr. Lees just where he stood."

* * *

Dr. H. M. Landing, of Edmonton, has removed to the city of Tacoma, to carry on the practice of Dentistry. Before leaving he was the guest of honor of the Edmonton Dental Society, when he was presented with a case of pipes as a token of the esteem of his fellow practitioners.

J. W. C.

Winthrop Johnson Deceased

 R. C. N. JOHNSON'S father, Mr. Winthrop Johnson, died on January 3rd, 1926, in his 94th year, after 65 years of residence in the province of Ontario. Mr. Johnson lived for over 40 years at Blackwater where, as one of the earliest residents, he was respected and revered throughout the entire district.

Mr. Johnson had three sons, all of whom are graduates in Dentistry, two of them, Doctors C. N. and J. W. Johnson, being in practice in the city of Chicago. Mr. Johnson's grandson, Mack Johnson, is an undergraduate in Dentistry, being a member of the second-year class at the University of Toronto.

The late Mr. Johnson always enjoyed the best of good health. He was in possession of all his faculties until the end and had retained his entire set of thirty-two teeth.

On behalf of the members of the Dental profession throughout the Dominion of Canada we extend to Dr. C. N. Johnson and the other members of the family sincerest sympathy in their bereavement.

Officers of Canadian Dental Organization.

Oral Health will be Pleased to Receive Additions or Corrections that Directory of Names May be Kept as Accurate as Possible.



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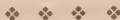
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DIRECTORY of DENTAL MEETINGS & OFFICIAL ANNOUNCEMENTS

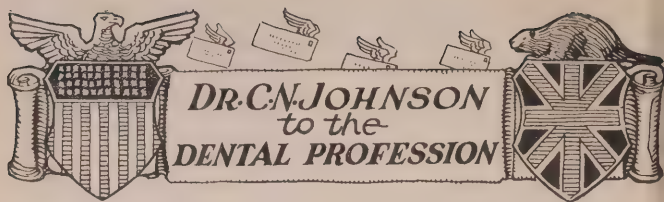
Dental Associations are Invited to use this Department Freely for
Announcements of Meetings



ONTARIO DENTAL ASSOCIATION—1926 Meeting at Toronto, May 17, 18, 19, 20, 1926.

CANADIAN DENTAL ASSOCIATION—1926 Meeting at Halifax, N.S., August 16th, 17th,
18th, and 19th, 1926.

SEVENTH INTERNATIONAL DENTAL CONGRESS—August 23-28, 1926, Philadelphia, Pa.



Two Boys and Two Men



As a boy I had two playfellows who stand out in my memory—not so much because of what they were as boys as because of what they became as men. They were apparently about equally endowed by nature, the one with a manifestly stronger constitution physically and the other with possibly a better mental capacity. Neither was brilliant in any respect nor with any outstanding characteristics. The most conspicuous thing about either was a certain frailness in the physical make-up of the one boy which set him a bit apart from his more boisterous playmates—something that was never apparent with the other.

Both started out in life with equal chances and equal opportunities, but they soon began to diverge. Bill, the frail boy—he was so frail we always called him Billy—began to go up in the world, while Jim—who was never called Jimmy—stood still for a short time and then began to drift down. It is not the old, old story of drink in the one case and abstinence in the other, because I have never heard that either of them drank. But Jim for some reason seemed to lose class—in fact he never acquired it—while Billy, slowly at first, but surely, began to gain form and to find himself. He started out in the world and finally got a job in a railroad office. Nobody dreamed that he would ever amount to much, or even that he would keep his job very long—and he didn't. But he was soon promoted to a better job in the same office, and then to a better one, and a still better one. This pale, thin, delicate boy used his brain to its full capacity, and it was soon found that he had a better brain than most people had suspected—probably than he himself had suspected. Application was his motto, and devotion to duty his ruling principle. One day a man was wanted for some responsible position near the head of the system, and the directors decided that, on his record, Billy was the man. He was no longer Billy, but Mr. W. T. P.—. The small, frail-looking man tackled the new job with the same intensity of purpose that had marked his career since he left school, and he made good. The last time he came back to the little town to visit his friends he came in his private car, and when the townspeople saw that car shunted on the siding and a well-

dressed, matured man of small stature step out of it, they had to rub their eyes to recognize the Billy they knew as a boy. Years of responsibility had brought firmness to his face, and resolution to his eye. He was no longer the timid, diffident boy, but the successful, confident man of affairs. He was quiet, of course, as most great men are, but there was a reserve force apparent in his every move that stamped him as a man who was accustomed to meeting large issues and to overcoming them with ease.

Billy is seldom seen any more around the home of his boyhood days. His parents are gone, his friends are scattered, and there is no one to talk to of the olden times. But if you ask anyone who is prominently connected with the great railway systems of the country if they know Mr. W. T. P—, they will tell you that he is one of the outstanding men of the day in the railroad world.

But what of Jim? He has never lived five miles away from the place he was born, which in itself is no reflection on him, and little handicap to his advancement. But he was shiftless and never used the brain that nature gave him, which is one of the besetting sins of humanity. He was content to dawdle along, and to drift in the line of least resistance. As a boy he would not exert himself to acquire an education, and as a man he would not exert himself to do anything. He lacked ambition, initiative, and apparently incentive. Of course he was a failure, and equally of course he became soured of the world. No one knew better than he how much of a failure he was, but he never once suspected the cause. He blamed fate for his lowly condition in life, when the fault all lay with himself. It is possible that far out in the recesses of his brain—whatever brain he had left—there may at times have lurked a vague suspicion that he might have bettered his lot if he had tried, but he never gave expression to any such thought. He was always railing bitterly against the world and bemoaning the blow that fate had dealt to him. He grew to be so disagreeable mentally, and so unkempt physically, that he was soon repulsive to everybody. People avoided him as they would a plague, and he became practically an outcast. Finally he landed in the poor-house, but even here, when he was subsisting on the county, he complained of his treatment, and declared that he was discriminated against. It was the same old story that fate had singled him out for its particular victim.

His chronic discontent made him leave the poor-house, and the last time I talked with him he vowed he would commit suicide. I contended with him that he would never do that—my contention being based on the conviction that he lacked the courage or the initiative to do such a thing. I heard of him later, and he was begging the privilege of sleeping in somebody's stable.

These two boys started out in life on equal terms. One of them went up in the world and became a great railroad magnate, honored and respected—a real asset to humanity, and a force for happiness to countless thousands who never come in personal contact with him. The other went steadily down till he made his bed beside the beasts in a stable. What made the difference? It was not the hand of fate that dealt to each a separate career. Fate did not wave a magic wand over the one and transport him to elysian fields where he could bask idly in pampered favoritism; nor did fate put its foot on the neck of the other and trample him in the dust of defeat and degradation. The cause of the difference in the careers of these boys which made of them such different men was wholly in the boys themselves. So far as fate, or chance, or condition, or circumstance were concerned, Billy might have become an outcast, and Jim a magnate. *Each individual is given the carving of his own career.* This is the fundamental lesson of life, and the sooner boys and men learn this lesson the better it will be for them, and for society at large.

C. H. Johnson

W. F. B. Colter, Deceased



IN the death of W. F. B. Colter, L.D.S., of Sarnia, Dentistry has sustained a real loss. He was one of a family of dentists, his father, Charles Colter, being among the pioneer Canadians to take up the profession of Dentistry.

The deceased was living in Strathroy when he graduated, and at once took over the practice in Sarnia which at that time was being carried on "part time" by his father. He continued in practice in Sarnia until his death, which occurred on January 3rd, 1926, at the home of his son, Dr. Chas. W. Colter, of Detroit, whom he was visiting during the Christmas vacation.

He was one of Sarnia's most highly respected citizens (having at different times filled positions in the Civic Council,) and an ardent military man, being one of few to possess a long service medal. He was very active in different fraternal organizations, including the Odd-fellows and Free Masons. The Knight Templars conducted the service at the mausoleum.

Dr. C. F. Colter, of Toronto, is a brother of the deceased.

Oral Health

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TORONTO, JANUARY, 1926

No. 1

EDITORIAL

The Dental Profession Suffers Loss in Death of Richard Gaud McLaughlin



IN the death of Dr. Richard Gaud McLaughlin, the dental profession loses a valued and esteemed member who has always rendered service of a high order to his patients, his confreres and his community. He occupied a pre-eminent place in the councils of the dental profession, being a man of strict integrity and good judgment.

Dr. McLaughlin's loss will be keenly felt in the Faculty of Dentistry of the University of Toronto, where he held a prominent place on the staff. But in no place will his loss be more keenly felt than as a member of the editorial staff of this Journal. Dr. McLaughlin had been associated with the writer in the editorial work of ORAL HEALTH since December, 1915, thus completing ten years of editorial service.

* * * * *



HE death of Dr. McLaughlin occurred on Tuesday morning, the twenty-second of December, 1925, in his 66th year, he having been born in the County of Peel, Ontario, in 1859. Dr. McLaughlin was the son of the late Joseph and Isabella McLaughlin, coming of Scotch and Irish parentage.

He was educated in the Public Schools of Ontario and received his subsequent training at the Brampton Collegiate Institute. For some years he was engaged as a teacher in the Public Schools, and in 1885 entered the Normal School, Toronto, where he completed his studies, taking first-class honors.

In the following year he began the study of dentistry in the Royal College of Dental Surgeons of Ontario and graduated with honors in the spring of 1889. In the same year he had the degree of Doctor of Dental Surgery conferred upon him by the University of Toronto, and at once began the practice of his profession in Toronto.

At the inauguration of the Toronto Dental Society in 1890, Dr. McLaughlin was chosen as its first president. For many years he was chairman of the Oral Hygiene Committee of the Ontario Dental Association and President of the Dental Protective Association of Ontario.

In 1916 he was appointed Professor of Jurisprudence on the Faculty of the Dental College, and when the new Faculty of Dentistry of the University of Toronto was organized he was appointed Professor of Ethics and Dental Jurisprudence.

In religion the late Dr. McLaughlin was a Presbyterian, previous to the organization of the United Church of Canada, of which he was a strong advocate.

* * * * *

RESOLUTION ADOPTED BY THE FACULTY OF DENTISTRY OF THE UNIVERSITY OF TORONTO:



BE IT RESOLVED: That this Council of the Faculty of Dentistry of the University of Toronto record its sense of great loss through the death of Dr. R. G. McLaughlin, Professor of Ethics and Dental Jurisprudence.

As a teacher Dr. McLaughlin was at once an instructor and friend of all the graduates. His counsel and guidance were eagerly sought and greatly appreciated. Through his unswerving insistence upon a high ethical standard in professional life, an indelible impression was made upon the student mind. Such teaching has contributed very largely towards the establishment of high ethical standards throughout the profession.

Dental literature has been greatly enriched through Dr. McLaughlin's contributions which, unfortunately, have been altogether too few.

His literary style was suited for emulation, being characterized by clearness of thought and expression. At all times he wrote as one having a correct perspective of the various difficult dental problems. In the literary field of endeavor Dr. McLaughlin's place will not easily be filled.

To all graduates in dentistry he occupied a unique position in that he was a wise and faithful counsellor to all who sought his aid through the Dentists' Legal Protective Association, of which organization he was the president. Here his ability in weighing evidence and forming sound judgments elicited the admiration and respect of the entire dental profession.

In the various capacities in which Dr. McLaughlin has served, whether as a member of the Faculty Council, Faculty Executive, or the various local and provincial organizations, his counsel and advice have been greatly esteemed.

Of him it may truthfully be said that in whatever capacity he served, whether as teacher, counsellor or executive, Dr. McLaughlin merited the admiration of all who were privileged to know him; but it was in his relationship as friend that he was most appreciated. He had the faculty of making friends and such friendships were lasting. Dentistry has indeed lost a true friend. In the words of Robert Burns:

"An honest man now lies at rest,
As ever God with His image blest;
The friend of man, the friend of truth,
The friend of age, and guide of youth."

* * * * *

A PERSONAL TRIBUTE FROM GEO. C. PIDGEON, D.D.,
MODERATOR OF THE UNITED CHURCH OF CANADA.

T is impossible to describe the sense of personal loss that came to us with the news of Dr. McLaughlin's passing. We had never thought of him as even weakening. He was always so strong and self-controlled, and always so perfectly in command of the situation that we leaned on him and followed him. To think of him as having passed on is to find the world immeasurably the poorer and Heaven itself so much the richer and brighter.

Do we realize how many men and women are putting their very lives into the service they give us? We accept it all unconscious of its value and its cost. Dr. McLaughlin gave us the best service that training, experience and technical skill could give us, and with it he gave himself. Now that a life so precious is gone, we stand aghast and wonder.

He was a staunch supporter of the work of young people in the church

and a life-long Bible student and teacher. His church always had a large place in his life.

It was into his profession, however, that he put the fullest measure of his devotion. A man's chief service to his generation is always rendered through his own business or profession. By far the most hours go into it. It is here that his ability and fidelity are finally proven. Other lines of activity, such as those we have mentioned, are valuable, but it is his standing in his own calling that determines his influence elsewhere, and it is the service rendered there that gives weight to his utterances of those general principles that govern all life.

Here Dr. McLaughlin's standing was among the highest. Into the service which he rendered his patients he put the best that was in him. In the councils of his peers and in his lectures to his students, he upheld those principles and ideals which have more to do than laymen can ever know with the service they receive and which determine the place of these potential leaders in every community.

The longer I live the more I appreciate the ethics or etiquette of the different professions. Outsiders know it not, but it is the demand which the profession makes on its own members—the standard which it requires them to uphold. As a consequence, the members of each profession render the public a service far better than the public can ever know, and service, not reward, is their law of life. In the different professions among us discoveries have recently been made of the highest value to humanity and have been placed with complete unselfishness at the disposal of the people. The profession of dentistry, to which Dr. McLaughlin belonged, is among the first of these in ideals and services, and in that profession and among the influences which have made it what it is, Dr. McLaughlin stood among the highest.

Dr. McLaughlin lived for the things unseen, and into that heritage he now has entered.

* * * *



EW men in any profession have been privileged to exert such a profound and helpful influence upon their fellows as has Dr. McLaughlin. His devotion to Dentistry was complete, and so active has been his life that his many contributions of service to his chosen profession make his work outstanding.

Many of the younger graduates regarded Dr. McLaughlin as their example of a true Christian gentleman and this is perhaps the greatest of all tributes that stand to his memory.

We mourn the loss of a true friend and loyal colleague who earned the love and admiration of all those who were privileged to know him.

W. S.

"Change lays not her hand upon truth."



ANGUS M. CLARK, D.D.S.

*D*OCTOR CLARK is this year celebrating forty years of dental practice and his many friends throughout Canada offer sincere congratulations.

ORAL HEALTH

*A JOURNAL THAT STANDS FOR THE OUNCE OF
PREVENTION AS WELL AS THE POUND OF CURE*



Vol. 16

TORONTO, FEBRUARY, 1926

No. 2

Amalgam Restorations

L. F. KRUEGER, D.D.S., TORONTO.



MAKING amalgam restorations involves really nothing new, and yet some details or minor changes from earlier teachings may interest and possibly help some to have greater pleasure and reward in this branch of work. There is nothing original about this on my part; it is just as the School of Dentistry is teaching the subject. At any rate, I have in my mind to cover the subject along these lines.

Since all are acquainted with the fundamentals of this phase of dentistry, we will stress certain parts of the practical work that observations prove need be given more thought and care than we have been accustomed to. With this idea in mind, let us review the subject briefly, that we may establish a plan for office routine that will assist one to get the most from this type of service in a sensible and practical way. There are, no doubt, many cases where we must of necessity temporize, such as the very old, invalids, convalescents, or other extraordinary circumstances. This is, however, not the phase of the work we will dwell on.

It should be kept in mind that amalgam probably has been abused more than any other filling material; and, while this may always be the case, there hardly seems any need, in this wonderful age of general advancement and progress, to live in this particular tradition of the past. Let it also be understood that good amalgam restorations, though not as costly as good gold inlays, are not necessarily cheap. The cost is purely an economic problem that must be frankly discussed with our patients. Let us, then, consider amalgam restorations in the light of the purpose which is to preserve the health, comfort and appearance of the hard and soft tissues of the mouth.

Amalgams, so far as they interest us, are divided into two groups—the high silver group, and the low silver group. Since the low silver group are made up of 50 per cent. ag. and 50 per cent. tin, and for this reason have poor edge strength and flow considerably under stress of mastication, we will dismiss them with this brief reference, except to credit their use for purposes of making amalgam models for inlay work, on account of the lesser cost; and for this copper amalgam would be still less costly, since it can be used over a number of times.

The high-grade alloys contain about 68 per cent. silver, 26 to 28 tin, 3 to 5 copper, 1 per cent. zinc. In this group there are several of reliable make to be had. It has been suggested to select a good one of this class, find the right proportion of alloy and mercury, learn how to use it, and then stick to it.

Much could be said about shrinkage, expansion, flow, edge strength, color, etc., but that is more or less metallurgy, and since these characteristics are manifested in an alloy according to the amount of tin, copper and zinc, we will pass these, too, for the same reason, as well as for the reason that the makers of alloys do the worrying about that part of it. Anyone who has not read articles recently on the characteristics and behavior of amalgams could spend an evening quite profitably on this.

While cavity preparation is a subject in itself, if we are to get anywhere it will be necessary to call attention to a few essentials, or the best alloy and amalgam technique will still leave something to feel badly over, and I should like every reader of this to take out his textbook or notes from his college days, and add this to them. Place cavity margins where you can get at them. This is a personal equation factor with each operator. Margins must be smoothly finished. While the gingival cavo-surface angle may stand for considerable bevel, for amalgam, approximal or occlusal cavo-surface angles do not, and it is necessary to have very little or no bevel here. Nor can we have this margin on the cusp eminences. Looking over amalgam fillings from three to twenty years old will convince one of the importance of properly placing the cavo-surface angle.

Matrices are necessary devices in amalgam work, in order to establish proper form. Proper form is imperative if we are to have normal function. Normal function preserves a healthy condition of hard and soft enveloping tissues. Normal function is dependent upon form, which includes proper contact, interproximal space, smooth margins—particularly gingival—marginal ridge, grooves, planes and ridges where and as they occur in the tooth or teeth in that mouth.

Considering briefly tooth form, we find the approximal contact point nearer the buccal surface and at the base of the cusp, presenting a larger lingual embrasure and a small buccal embrasure, so that in

mastication the food is directed into the oral cavity rather than to the buccal side.

The convexity of the approximal makes for a minimum amount of contact in normal cases. The contact serves to keep normal alignment of teeth, to keep food from jamming into the interproximal space, damaging the soft tissues and alveolar crest of bone, a causative factor in alveoloclasia, pus pockets, etc.

A suitable matrix must then be used. Location and conditions to be met, as well as choice of the operator, will be determining factors in the selection.

The matrix must be immovable, well adapted at the gingival, sufficiently rigid to withstand condensation pressure, make provision for contact, and be removable without injury to filling material.

The Ivory matrix is more widely used than any other, very simple and easy to handle; desirable where there is no adjacent tooth to make contact with. In other cases previous separation is necessary to allow for contact, and a wedge of some sort required to hold band close at the gingival—wooden wedge, cotton or modelling compound forced in to hold band close. Difficulty encountered is that filling may easily be damaged in its removal.

The Odderdonk—using 36 gauge copper, encircling the tooth and tightened on buccal surface—is desirable in some cases.

Thirty-six gauge copper band, cut and shaped to meet the needs, and tied on with ligature. You may cut a hole in this with No. 2 round bur for contact. This offers good possibilities.

Last, but not least, I present, I believe, the best—the heavy steel matrix, held in place with a Perry separator, giving immediate separation and splendid adaptation and stability.

The following bulletin on the manipulation of amalgam has been issued by the Faculty of Dentistry, University of Toronto.

PROPORTIONS.

Proportions need not be exact, but mercury should be plentiful, sufficient to avoid any trace of dryness in the mixing, and just within the other extreme of liquid plasticity; either extreme is unfavorable to thorough amalgamation. When the proportions have been decided upon by a trial mix, it will save time and material to use the small amalgam balance sold for that purpose, or the alloy mercury gauge.

MIXING.

All high grade alloys amalgamate rather slowly. It requires thorough rubbing of the particles in the presence of mercury to develop thorough amalgamation, conditions that prohibit a hand mix. Mixing time of

three minutes, or a minimum of *one minute* in the electric mixer. At the end of the mixing period the mass should be sufficiently plastic to flatten out to about half of its diameter when rolled into a ball and dropped on the cabinet from a height of about four inches.

Thorough mixing is necessary to attain the degree of plasticity most favorable to adaptation.

It is also necessary to secure the greatest strength for the filling.

An incomplete mix will make an unstable filling by causing shrinkage or expansion in the finished filling in from one to nine months under the varying temperatures in the mouth.

The very plastic consistency described should be retained during the filling of the first two-thirds of all average large and proximo-occlusal cavities to insure adaptation in the use of high grade alloys. This important requirement is best accomplished by temporarily retaining sufficient of the excess of mercury (commonly removed during the final mixing and kneading), to be removed ultimately, after it has served its purpose, by tamping, forceful and orderly packing, and the final packing detail, stepping the cavity walls.

TAMPING.

Tamping has proved to be a very material aid in the removal of excess mercury, to uniform condensation and adaptation. Tamping is done by lightly tapping each piece of amalgam placed in the cavity, with the plugger, until it spreads as a uniformly thick, dense and plastic layer, in contact with the surrounding walls and well into the angles. This procedure provides uniform bulk and plasticity under each thrust of the plugger. Tamping in conjunction with forcible and orderly condensation seems to be the simplest and the most effective means for working out the excess mercury, and experience shows a decided improvement in stability, and perfection of adaptation, when this operative detail is carried out.

CONDENSATION.

The packing follows tamping, and should be as forceful and thorough as possible, and applied with the greatest possible uniformity. The most practical means of accomplishing this in the mouth is by an *orderly stepping* of the plugger. Following the detail of tamping, we start the packing of each piece of amalgam with a medium or large plugger at the centre of the filling, stepping a little less than its diameter in *one* direction outward in a gradually enlarging circle until the cavity walls are reached. The surplus mercury expressed is scraped off with the side of the plugger, and this surplus may be used for the finishing of the filling, by forcibly pinching out the fluid mercury to the point where you have remaining a rather stiff but workable mass which is again

tamped and packed, repeating the operation until the cavity margins are well covered with hardened amalgam.

STEPPING THE CAVITY WALLS.

The final condensation of each piece of amalgam is done by inclining the smallest plugger towards the cavity wall and stepping about half of its long diameter (size of the plugger about 1-2 by 1-8 m.m. in diameter) immediately against the walls and well into the angles, once around the cavity.

With an orderly packing, the excess mercury is always driven in one-direction-outward, where it is at all times free to come to the surface to be removed.

The necessity for packing force and thoroughness has always been taught (though not sufficiently applied), but the need for plasticity, tamping and orderly condensation as applied to amalgam, are new thoughts or facts that *must* be accepted, to secure uniformity in results in adaptation, strength and stability.

A filling unequally condensed is to the same extent unequal in its resistance to crushing stress and flow, strongest where it has received the maximum condensation. Weakest where it has received the minimum condensation, little or no excess mercury where the filling has received the maximum condensation. Excess mercury always means mercury unamalgamated.

Where the right kind of matrix has been properly adapted, and the carving well taken care of, finishing or polishing, which is done at a subsequent visit, need not require much time. The occlusal surface with plug finishing burs—pumice stone on fine bristle wheels, rubber cups, felt wheels, various kinds of wood points in hand or engine polisher. Interproximal space—fine strip, China silk with pumice, etc. Apply Perry separator to polish contact. Filling should then be thoroughly burnished; this increases density and edge strength.

SUMMARY.

Dry cavity. Bevel of enamel none or very slight. Do not have thin margins of amalgam, as amalgam requires bulk for strength. Matrix that will fill the requirements in three walled cavities.

Correct weight of alloy and mercury. Mix three minutes in mortar, one minute in engine mixer, followed by one minute hand kneading. Amalgam worked dry cannot be properly adapted to cavity walls.

Remove excess mercury as packing progresses; carve and shape filling when sufficiently set. Polish and burnish at subsequent visit.

About three-fourths of all restorations placed in teeth are of amalgam.

Time and improvement of technique will bring its just reward.

The knowledge we have on cavity preparation, the good alloy we can purchase, and the accurate technique we have for placing, should remove the idea that amalgam is a cheap, poor filling. Our patients can be educated to appreciate that amalgam restorations are A.No.1, and for that class of work we should have a fee in keeping with the service rendered.

Reciprocity in Dental Licenses and National Registration

WALLACE SECCOMBE, D.D.S.

RECIPROCITY is "equal rights or benefits to be mutually yielded or enjoyed," and, as applied to dental licenses, means an arrangement between two states, provinces, or countries, whereby dental licensure in the one is accepted as evidence of qualification in the other. The advantage of such an arrangement to the dental practitioner who desires to change his residence or citizenship is that he is not required to take the prescribed examinations, and this is a great boon to the average practitioner. The examination requirement becomes more and more onerous to the dentist as the years pass.

In considering reciprocity in dental licenses, it is quite justifiable to include in one group all those who are recent graduates, and to whom an examination is not such a hardship, and in another those who have been engaged in regular, ethical practice for a term of years. The personal character and skill of those of the latter group are well established and could be easily authenticated. All worthy practitioners of some years' standing should be considered a "preferred class" in connection with reciprocity in dental licenses.

This whole question is quite a live subject of discussion in the dental world at the present time. At the meeting of the National Association of Dental Examiners in Louisville, Kentucky, last September, the problem of national registration was thoroughly discussed. The question was finally referred back to each State Association for consideration, with the request that the State boards instruct their delegates to the meeting to be held in Philadelphia next August, that some definite action might be taken upon the question.

Those who consider the problem of the reciprocal transfer of licenses entirely from the standpoint of the individual dentist are apt to divide the profession into two classes (a) those desiring to move, and (b) those wishing to remain where they are. But important as the

interest of the individual dentist is, there are other and more important phases of the problem to consider, not the least of which is the possible effect of reciprocity upon dental standards.

There is a wide difference of opinion among the officials of dental examining boards, many of them believing that State licensing examinations maintain standards and prevent the influx from other States of practitioners who are less skilful, while others would usher in national registration. The former view is expressed by a member of the Board of Examiners of the State of Washington, who says:

"This State in 1923 and 1924 tried out a reciprocity agreement with another State, and finally both States mutually withdrew from the agreement. It was reciprocal only in so far as exempting applicants from written examinations. The result was entirely the opposite of what we expected, as in the two years' trial none of the applicants who made application to this State made a passing grade of 70 per cent. in practical work. Seemed as though the only ones applying were those who had not made good in the State where they were originally licensed. On the other hand, over 80 per cent. of those who came from other States in the past two years, and took both the theoretical and practical examination, passed the same examination with good average grades well above 70 per cent. I must say candidly that after five years' experience I am not in favor of reciprocity of dentistry."

Quite another view is expressed by a member of the Alabama Dental Board, who believes that "the world should be a man's parish, and that he should be allowed to practise anywhere after having once qualified before a board of examiners," and proceeds, "I will welcome the day when the matter can be gotten in workable form, and then men will not be harassed with examinations when changing their places of residence."

One of the officials of the Pennsylvania Board feels that "Reciprocity is viewed entirely in the wrong light. It seems to be viewed from the dentists' standpoint. The licensing boards were created to protect the public, not to monopolize the practice of dentistry nor to help the dentist. We give all applicants from recognized schools an oral and practical examination after ten years of practice, and our board is glad to license good men; but we have enough of the other kind. We have no suspicions of other boards, but we are not willing to accept all comers."

The widespread interest in this subject has led the writer to seek the views of many of the officials of dental examining boards upon the suggestion that transfers from one section of a country to another be arranged officially through the licensing boards concerned, rather than by way of individual applications of the licentiates.

The advantage of having applications dealt with officially through the two licensing boards concerned, rather than by direct individual application, would be that the professional and ethical standing of the applicant would bear the stamp of approval of the home authority, and should make a reciprocal arrangement easily possible between States where the dental standards are on a parity.

Even in adjoining States where dental standards are equivalent, reciprocity in dental licenses seldom obtains. There is always a lurking suspicion that one State or Province might become a "dumping ground" for another. Under the plan suggested above it might be possible to equalize the transfer of practitioners from one country to another, the arrangement being based upon the principle of equality in numbers. This would give to dentists desiring to reside elsewhere an opportunity of procuring a license to continue the practice of their profession in their new home, and would doubtless be helpful in broadening the ideas of the profession and preventing "in-breeding." The secretary of one of the State Boards in the United States, when asked his opinion, said:

"The idea of making application through their own licensing boards for registration by another board would not, in my opinion, help matters, as I cannot see the licensing board of any State or Province refusing to recommend any licensed man (unless on account of moral character) to another State or Province on account of the character of his professional ability. Ability, coupled with ethical and moral worth, is what is desired here, and those who have these need not fear examination."

An officer of the State Board of Registration and Examination in Dentistry of New Jersey was also dubious of the value of the suggestion. He replied as follows:

"This board has, at times, had agreements with several other examining boards, and we have followed, to a certain extent, the plan submitted by you, as we have had investigations made of the man who wished to remove to another State, and if we felt he was a man of the proper calibre we have recommended him. The board to whom he was recommended has been furnished with copies of the recommendation, a photograph of the man, certified to by those who recommended him, as well as other data concerning the man. In spite of this we have found that men recommended to us by the boards with which we were in agreement were not the kind of men we wish to accept."

A member of the Idaho Board reports that State "quite in favor of having reciprocity in dental licenses arranged by the licensing boards of the various States. In fact, Idaho does not accept any applicants for registration by reciprocity unless there has been some reciprocal agreement made with the State in which the applicant is licensed."

New York State is reported as somewhat chary of reciprocity or interchange of dental licenses "until the same standard of dental education has been adopted by all the dental schools of North America, and further, until the laws governing the practice of dentistry include nearly, if not the same, requirements for licensure." An officer of the board has expressed his view of the question in the following paragraph:

"There is considerable agitation and discussion and some sentiment in favor of a National Board of Dental Examiners, which, if adopted, would bring about the results as expressly desired in your circular letter. However, the creation and formation of such a board can only ensue when all the States, territories and Provinces of North America have reached a workable solution through their dental educators and dental schools, to the end that all dental graduates shall have had the same academic preparation and pursued the same dental course. New York State does not preclude from its examination and licensure a candidate, no matter from what State, territory or Province of North America he comes, provided his academic and professional education meets the minimum requirements as prescribed by the Regents of this State. This procedure necessarily requires that each candidate be considered on his merits."

Upon the other hand, a member of the Nebraska Board is quite in favor of the principle of reciprocity: "Your letter with statement on reciprocity was received. I have read and again read your plan many times, wondering if your suggestion would be valuable. I have always been in favor of reciprocity where standards of the different States were equal, and Nebraska now has reciprocity with eleven States. The plan you have outlined looks very good with one exception—that is, the arrangement being based upon the principle of equality in numbers. I do not think that numbers should be considered; I know what the argument is, that all will go to California, or Florida, or some other sunny place; that to me is no argument at all. I happen to have a brother an M.D. He has his license in sunny California, but is practising in Hastings, Neb., and he received his license through reciprocity. How long is it going to be that dentists will continue to be afraid of their fellow practitioners? I want to state that I voted for a National Board at the Louisville meeting; it may not be just exactly what we want, but I do believe it is a step in the right direction."

In so far as the Dominion of Canada is concerned, doubtless a somewhat similar difference of opinion would be found to exist among the Provinces as exists among the several States referred to.

Dr. Leslie McIntyre, of Edmonton, has expressed his personal view in the following words: "In Canada we have the skeleton of an organization that should fill the bill in every way were it put in working shape and modernized. I refer to the misnamed Dominion Dental

Council. Should the various classes be merged into one, an examining board of men familiar with the subjects they examine be appointed, and all men desiring to practise be required to present its certificate on moving, we would then be in the same position as the Medical Council of Canada, whose certificate is the only one that will be accepted in the Province of British Columbia from now on. I presume that, in time, other Provinces will follow. I believe that were we to concentrate on the Dominion Dental Council and make it something acceptable to all Provinces, in a manner similar to Medicine, your idea would be carried out in so far as Canada is concerned. I believe we have plenty of work in Canada to get our own house in shape to keep us busy for some time to come. We are on our way, and are accomplishing much in a disunited sort of way. We have a wonderful chance in having already accomplished what our American friends find so hard, a start of a National Council, which could be made a splendid central body. But it has too many classes, too many examining boards, too many loopholes, etc., to make for a high standard, but through it we have a good chance to maintain ethics, as well as providing an interchangeable certificate."

Dr. A. W. Faulkner, of Halifax, believes that the solution to the problem lies primarily in the standardization of educational requirements, both academic and professional. Dr. Faulkner says:

"Although the subject of reciprocity in dental licenses is a familiar one, the plan as outlined by you in your recent communication presents the matter from a different viewpoint from that usually discussed. To me it does seem to be a peculiar condition of affairs that a man who has prepared himself for the profession by taking a broad preliminary education, followed by a full, regular dental course, should be limited *geographically* in the practice of that profession.

"My opinion, however, is that the matter should be attacked from the standpoint of standardization of both educational and professional requirements to be acquired by the prospective practitioner. When such standardization is attained, the matter of reciprocity in dental licenses will be easier of solution.

"With regard to the plan of having all applications for transfer made through the Licensing Board of the Province or State in which the dentist is practising, it might be difficult to withhold the Licensing Board's approval in the case of *any* registrant, as the fact of his being registered argues that he is entitled to have his application approved. In fact, an unscrupulous board might welcome the opportunity of getting rid of *some* men."

In the United Kingdom the Dentists' Acts do not contain clauses relating to reciprocity, and consequently the General Medical Council cannot require, in regard to its recognition of a dental qualification

obtained elsewhere, that the Province in which it was obtained should recognize a British qualification. In other words, one board would be left free to act independent of the other and be not bound by formal agreement. The Council, however, would doubtless welcome a reciprocal understanding, feeling that it would not be unreasonable to expect authorities throughout Canada to grant the same recognition to British qualifications as has been given by the General Medical Council to qualifications of several of the Canadian Provinces.

Considering all of the factors involved in this difficult problem, it would seem that a plan of national examination and registration would be much preferable to any plan of reciprocity as between individual Provinces or States.

First International Orthodontic Congress



THE First International Orthodontic Congress will be held in New York City, at the Hotel Commodore, August 16th to 20th, 1926. Membership in the Congress consists of two classes:

Regular Membership.—This membership can be had only through membership in component societies. It carries the right to vote and hold office. A payment of ten dollars (\$10.00) by a recognized Orthodontic Society and the endorsement of the plan of the Congress makes that society a component part of the Congress and its members regular members of the Congress, and entitles the society to a bound copy of the Proceedings.

Subscribing Membership.—This membership is open to all ethical members of the dental and medical professions, irrespective of their membership in the component societies. The dues for this membership shall be ten dollars (\$10.00), and shall entitle the member to all the privileges of the scientific session and a bound copy of the Proceedings. He shall have no right to vote or hold office unless he is a regular member.

It will be noticed that all members of the dental profession have the privilege of attending the Congress after becoming subscribing members.

In order for a regular member to receive the bound copy of the Proceedings it will be necessary for him to pay ten dollars (\$10.00), the same as a subscribing member.

The Orthodontic Congress is for the advancement of Orthodontia as a science, and every member is allowed to take advantage of this meeting.

Membership blanks and further information can be obtained from Dr. William C. Fisher, President General, 501 Fifth Avenue, New York, or Dr. Walter H. Ellis, Secretary General, 397 Delaware Avenue, Buffalo, N.Y.

An Act to Provide for the Establishment of a Medical Council in Canada

[*The Medical Council of Canada was established in 1912. The registration fee is \$1.00 in each case, and the Registrar is Dr. R. W. Powell, of Ottawa. The Act as it stands at present is published herewith in full.—Editor.*]

SHORT TITLE.

1. This Act may be cited as the Canada Medical Act.

INTERPRETATION.

2. In this Act, unless the context otherwise requires,—
 - (a) "Medicine" shall be held to include surgery and obstetrics, and to exclude veterinary surgery; and "medical" shall be held to include "surgical" and "obstetrical";
 - (b) "provincial medical council" includes "provincial medical board" and "college of physicians and surgeons";
 - (c) "university" shall mean any university which has a teaching medical department in connection therewith, and has the power to grant medical degrees;
 - (d) "medical school" includes any institution recognized by a provincial medical council wherein medicine is taught."
 - (e) "the Council" means the Medical Council of Canada constituted under the provisions of this Act;
 - (f) no retroactive effect shall be given to any provision.
3. This Act shall not be construed as authorizing the creation of medical schools or the giving of medical tuition.

CONSTITUTION OF THE COUNCIL.

4. The persons from time to time appointed or elected, or otherwise being, under the provisions of this Act, members of the Medical Council of Canada, are hereby constituted a corporation under the name of the Medical Council of Canada.
5. The purposes of the Council shall be to promote and effect,—
 - (a) the establishment of a qualification in medicine, such that the holders thereof shall be acceptable and empowered to practise in all the provinces of Canada;
 - (b) the establishment of a register for Canada of medical practitioners, and the publication and revision from time to time of such register;

“(c) the determination and fixing of the qualification and conditions necessary for registration, the examinations to be undergone with respect to professional subjects only, and generally the requisites for registration: Provided that the Council shall not determine or fix any qualifications or conditions to be complied with as preliminary to or necessary for matriculation in the study of medicine and for the obtainment of the provincial licenses, these being regulated as heretofore by the provincial authorities;”

(d) the establishment and maintenance of a board of examiners for examination and granting of certificates of qualification;

(e) the enactment, with the consent and at the instance of the medical councils of the various provinces of Canada, of such provincial legislation as is necessary to supplement the provisions of this Act and to effect the foregoing purposes.

6. The Council may acquire and hold such real estate and personal property as is necessary or expedient for the purposes of the Council or of providing a revenue therefor, and may sell, lease or otherwise dispose thereof; but the annual value of the real estate owned by the Council and held for the purposes of revenue only shall not at any time exceed the sum of twenty-five thousand dollars.

7. The Council shall be composed of—

“(a) three members who shall be appointed by the Governor-in-Council, each of whom shall reside in a different province; but until such time as the provinces of Saskatchewan, Alberta and British Columbia shall have been entitled to university representation, two of the three members so appointed shall be chosen from two of these provinces;

“(b) two members representing each province, who shall be elected under regulations to be made in that behalf by the provincial medical council;

“(c) one member from each university or incorporated medical college or school in Canada having an arrangement with a university for the conferring of degrees on its graduates, engaged in the active teaching of medicine, who shall be elected by the university or by such college or school under such regulations, as may govern in that behalf;

practitioners in Canada, each of whom shall reside in a different province.”

“(d) three members who shall be elected by the homeopathic

2. No one shall be a member of the Council unless he—

(a) resides in the province for which he is an appointed or elected member;

(b) is a duly registered member of the medical profession according to the laws of the province which he represents;

(c) is duly registered as a medical practitioner in the register established under the provisions of this Act; but this latter qualification shall not be required of any of the members originally composing the Council.

8. The term of office for members shall be four years.

2. Any member may at any time tender his resignation by written notice thereof to the president or to the secretary of the Council, and, upon the acceptance of such resignation by the Council, the Council shall forthwith give notice in writing thereof, in case of an appointed member, to the Secretary of State for Canada, and, in case of an elected member, to the secretary of the medical council for the province, or to the university, incorporated medical school or college, or if a representative of the homeopathic practitioners resigns, to the remaining homeopathic representatives upon the Council.

3. Any person who is or has been a member may, if properly qualified, be reappointed or re-elected; but no person shall at one time serve as a member in more than one capacity.

4. In the case of members of the Council whose term of office is about to expire, successors may be appointed or elected at any time within three months before the expiration of such term; and where any vacancy exists in the membership of the Council by reason of any term of office having expired, or otherwise, such vacancy may be filled at any time.

5. If there has been a failure to elect a member of the Council, or to elect a properly qualified member, or to cause the name of the member elected to be certified to the secretary of the Council within a reasonable time after such election might have been made, then, after notice from the Council, requiring the provincial medical council, or the university, or incorporated medical school or college, or the homeopathic representatives to cause such election to be made, and to certify the result thereof to the Council within one month from the date of service of such notice, the Council may, in case the default continues, itself elect such a member.

6. A member appointed or elected to fill a vacancy caused by death or resignation shall hold office in all respects as the person in whose place he is appointed or elected would have held office, and for the remainder of the term for which that person was appointed or elected.

7. All members appointed or elected shall continue in office until their successors are appointed or elected, or until the expiration of their term of office if their successors are appointed or elected before the expiration of such term of office.

OFFICERS OF THE COUNCIL.

9. The Council may from time to time—

(a) elect from among its members a president, a vice-president and an executive committee;

(b) appoint a registrar, who may also, if deemed expedient, act as secretary and treasurer;

(c) appoint or engage such other officers and employees as the Council deems necessary to carry out the objects and provisions of this Act;

(d) require and take from the registrar, or from any other officer or employee, such security for the due performance of his duty as the Council deems necessary;

(e) fix the allowances or remuneration to be paid to the president, vice-president, members, officers and employees of the Council.

MEETINGS.

10. The Council shall hold its first meeting at the city of Ottawa, at such time and place as is appointed by the Minister of Agriculture; and thereafter an annual meeting of the Council shall be held at such time and place as is from time to time appointed by the Council.

2. Until otherwise provided by regulation of the Council, eleven members of the Council shall form a quorum, and all acts of the Council shall be decided by a majority of the members present.

REGULATIONS.

11. The Council may make regulations not contrary to law or to the provisions of this Act, for or with reference to all or any of the purposes or objects for the promoting or effecting of which the Council is created or established, including, but without limiting, the generality of these powers—

(a) the direction, conduct and management of the Council, and of its property;

“(b) the summoning and holding of the meetings of the Council, the times and places where such meetings are to be held, and the conduct of business thereat.”

(c) the powers and duties of the president and vice-president and the selection of substitutes for them if unable to act from any cause at any time;

(d) the tenure of office, and the powers and duties of the registrar and other officers and employees;

(e) the election and appointment of an executive committee and of other committees for general and special purposes, the definition of their powers and duties, the summoning and holding of their meetings, and the conduct of business by such committees;

(f) generally, all fees to be required, paid or taken under this Act;

“(g) The establishment, maintenance and effective conduct of examinations with respect to professional subjects only, for ascertaining whether candidates possess the qualifications required; the number, times and modes of such examinations; the appointment of examiners; and generally all matters incident to such examinations, or necessary or expedient to effect the objects thereof;

“(h) The admission to examination of holders of diplomas obtained outside of Canada from a medical school recognized by the Council.”

(i) generally, all matters which it is necessary or expedient to provide for or regulate in pursuance of the purposes of this Act and in furtherance of its general intention.

2. No regulation made under the authority of this section shall have effect until approved by the Governor-in-Council.

12. Notwithstanding anything in the last preceding section contained or any power thereby conferred,—

“(a) No candidate shall be eligible for any examination prescribed by the Council, unless he is the holder of a provincial license, or unless he presents a certificate from the registrar of his own provincial medical council that he holds a medical degree accepted and approved of by the medical council of the said province.”

(b) the standard of examination shall not, at any time, be lower than the highest standard for the like purpose then established for ascertaining the qualification for registration in any province;

(c) the possession of a Canadian university degree alone, or of a certificate of provincial registration founded on such possession, obtained subsequent to the date, when the Council shall be first duly constituted under this Act, shall not entitle the possessor thereof to be registered under this Act.

13. A copy of any such regulation certified by the Registrar under his hand and the seal of the Council, may be received in evidence without proof other than the production of a copy purporting to be so certified.

“14. The Council shall make such regulations as shall secure to homeopathic practitioners, and to all applicants for registration who desire to be practitioners of the homeopathic school, rights and privileges in respect of registration by the Council not less than those now possessed by them under the laws of any province, and under the regulations of the provincial medical council thereof.”

BOARD OF EXAMINERS.

15. At each annual meeting of the Council, the Council shall appoint a board of examiners to be known as the Medical Council of Canada Examination Board, whose duty it shall be to hold the examinations prescribed by the Council, subject to the provisions hereinbefore contained.

2. The members of such board of examiners shall be eligible for reappointment.

EXAMINATIONS.

"16. The subjects of examination and the eligibility of candidates shall be decided by the Council, and candidates for examination may select to be examined in the English or French language. A majority of the committee conducting the examination of any candidate shall speak the language in which the candidate elects to be examined;

"2. Examinations may be held at those centres at which there is a university or college actively engaged in the teaching of medicine or having hospital facilities of not less than one hundred beds."

REGISTRATION.

17. The Council shall cause to be kept by the Registrar under the direction of the Council a book or register to be known as the Canadian Medical Register, in which shall be entered, in such manner and with such particulars as the Council directs, the names of all persons who have complied with the requirements of this Act and with the regulations made by the Council respecting registration under this Act, and who apply to the Registrar to have their names so entered.

18. Every one who passes the examination prescribed by the Council, and otherwise complies with all the conditions and regulations requisite for registration as prescribed by this Act and by the Council, shall, upon payment of the fees prescribed in that behalf, be entitled to be registered as a medical practitioner.

"2. Any person who has received a license or certificate of registration in any province previous to the date when the Council has been first duly constituted under this Act, and who has been engaged in the active practice of medicine in any one or more provinces of Canada, shall, after ten years from the date of such license or certificate, be entitled to be registered under this Act as a medical practitioner, without examination, upon payment of the fees and upon compliance with the other conditions and regulations for such cases prescribed by the Council: Provided that if the medical council of any province is not satisfied with the period of years prescribed by this sub-section such medical council may, as a condition to provincial registration, exact an examination in final subjects from practitioners registered under this sub-section, and the said examin-

ation shall be held according to the provisions of the by-laws or rules of the respective provincial councils."

19. Any entry in the Register may be cancelled or corrected upon the ground of fraud, accident or mistake.

20. In any case of an application for registration or for correcting or amending any entry upon the Register, the applicant, if aggrieved by the decision of the Registrar, may appeal to the Council, and the Council shall hear and determine the matter; but all applications to cancel or strike off entries from the Register, made adversely to the person whose registration it is desired to affect, shall be by the Registrar referred to the Council, and the Council shall, after three months' notice served personally or sent by post, prepaid and registered, to the last known address of such person, hear and determine all such applications.

21. If it is made to appear to the Council that there is reasonable ground to believe that any person registered under this Act has been convicted, either in any part of His Majesty's possessions or elsewhere, of an offence, which, if committed in Canada, would be an indictable offence under the Criminal Code, or that he has been guilty of infamous or disgraceful conduct in a professional respect, then, whether such offence has been committed, or such conviction has taken place, or such infamous or disgraceful conduct has occurred, either before or after the passing of this Act, or either before or after the registration of such person, the Council shall, after three months' notice served personally or sent by post, prepaid and registered, to the last known address of such person, hear and consider the matter, and, if satisfied that such person has been so convicted or is guilty of such offence or of such infamous or disgraceful conduct, direct the Registrar to erase the name of such person from the Register: Provided, however, that if a person registered under this Act has likewise been registered under the laws of any province, and such provincial registration has been cancelled for any of the causes aforesaid by the authority of the provincial medical council for that province, the Council shall then, without further inquiry, direct the registration of such person under this Act to be cancelled.

2 The name of a person shall not be erased under this section,—

(a) because of his adopting or refraining to adopt the practice of any particular theory of medicine or surgery; or,

(b) because of his conviction, out of His Majesty's possessions, of a political offence against the laws of any foreign country; or,

(c) because of his conviction for any offence which, though coming within the provisions of this section, is, in the opinion of the Council, either from the trivial nature of the offence or from the circumstances in which it was committed, insufficient to disqualify a person from being registered under this Act.

22. Upon any appeal to the Council, or upon any application to erase the name of any person from the Register under either of the last two preceding sections, the person applying, or the person charged, shall have the right to appear and be heard, either in person or by counsel.

COMMISSION OF INQUIRY.

23. Whenever it is made to appear to the Governor-in-Council that the Council is not complying with any of the provisions of this Act, the Governor-in-Council may refer the particulars of the complaint to a commission of inquiry consisting of three members, one of whom shall be appointed by the Governor-in-Council, one by the Council, and the third by the complainant, and such commission shall proceed to inquire in a summary manner and report to the Governor-in-Council as to the truth of the matters charged in such particulars of complaint, and in case of such particulars, or any of them, being found by the commission to have been established, the commission shall recommend the remedies, if any, which are in its opinion necessary.

24. The Governor-in-Council may require the Council to adopt the remedies so recommended within such time as the Governor-in-Council, having regard to the report of the commission, thinks fit, and in default of the Council complying with any such requirement, the Governor-in-Council may amend the regulations of the Council, or make such provision or order as may seem necessary to give effect to the recommendation of the commission.

25. The commission shall have power to administer oaths, enforce the attendance of witnesses and the production of books and papers, and shall have such other necessary powers for the purposes of any inquiry as are conferred upon it by the Governor-in-Council.

“26. No amendment to this Act may be proposed on behalf of the Council unless previously accepted by the provincial medical councils.”

“27. This Act shall not come into force until the legislatures of all the provinces have enacted legislation accepting its provisions: Provided, however, that the medical board of any province may at any time order the withdrawal of the representation of the said province upon the Council, by a resolution passed at a general or special meeting of the said board called for the purpose and carried by the votes of two-thirds of the members present at the said meeting, and notice of which resolution has been inserted for three months previously in *The Canada Gazette*; and in case of such resolution being passed, the provisions of this Act shall immediately cease to apply to the said province and no more persons shall be given the right to practise medicine within the jurisdiction of the said legislature by reason of their qualification or registration under this Act.”

Conclusions of Report of the Committee of the Privy Council in Great Britain for the Investigation of Dental Disease



IN regard to the main issues, the replies to the original questions are definite, and may on the whole be considered reliable.

(1) *Eruption.* The calculated dates of eruption of the several morphological varieties of the permanent teeth correspond fairly closely with those given by Pitts, James, and Röse, and with those generally accepted. It will be noted that the least variable in this respect are the central incisors and the first permanent molars, and that the most variable are the premolars. The report indicates that the teeth of girls erupt rather earlier than those of boys; and that the teeth of the lower jaw appear before those of the upper, except in the case of the premolars.

(2) *Incidence of Caries in Permanent Teeth.* The report indicates no significant sex difference. Taking both sexes together, the incidence of caries is higher in the lower molars than in the upper; and higher in the upper incisors and premolars than in the lower. In comparing one type of tooth with another (Table V) it is seen that the first permanent molars, which have been present in the mouth for the longest time, show the highest incidence of caries at all ages. If the incidence of caries is calculated for each tooth at a period of approximately one year from the average date of eruption, it will be found that the incidence is highest in the lower second molars (28.2 per cent. at 12-13 years), and the subsequent order, in a descending sequence is: lower first molars (23.5 per cent. at 7 years), upper first molars (14.6 per cent. at 7 years), upper second molars (13.4 per cent. at 13 years), upper second premolars (7.2 per cent. at 12 years), upper first premolars (3.6 per cent. at 11 years), upper central incisors (0.6 per cent. at 8-9 years), upper lateral incisors (0.4 per cent. at 9-10 years). This gives a clear and valuable indication of the relative liability of these teeth to caries.

(3) *Surface Distribution of Caries.* In the permanent molars the occlusal surface is by far the most frequently attacked; in the upper molars the mesial surface, and in the lower the buccal surface comes next in order of frequency; this difference may be accounted for by the deep buccal pits which are present on lower molars. In the premolars the occlusal and distal surfaces are attacked with about equal frequency; in the upper central and lateral incisors the mesial surface is most frequently attacked. The numbers of carious canines and lower

incisors are too small to warrant any deduction with regard to these teeth.

(4) *Arrested Caries.* In permanent teeth arrested caries was found in only 40 cases out of 6,753 carious teeth examined (0.59 per cent.). The numbers of each separate type of tooth are too small to warrant any comparison as to the relative frequency of arrest in different types. In the deciduous teeth of the upper jaw nearly 4 per cent. of carious teeth showed signs of partial or complete arrest, the highest proportion being in the upper lateral incisors, of which 53 out of 779 examined (6.8 per cent.) showed signs of arrest.

(5) *Hypoplasia.* For reasons stated in the Introduction, the figures given in Tables XII, XIII, and XIV, showing the incidence of certain forms of gross hypoplasia, give no real indication of the frequency with which structural defects occur. The most significant facts which are established in relation to the forms of hypoplasia dealt with in this report are (a) the increased susceptibility to caries in these teeth, the proportion of carious permanent teeth in this group being more than double that in normal teeth, and (b) the fact that in the great majority (88.91 per cent. of permanent and 88.3 per cent. of deciduous teeth) it is the hypoplastic area that is attacked by caries.

(6) *Gingivitis.* The report indicates that the slighter forms of gingivitis are very common, occurring in approximately one-third of all the children examined, and that there is a steady rise, with increasing age, in the numbers with the severer forms of the condition.

(7) *Malocclusion.* Antero-posterior malocclusion, unilateral or bilateral, was found in varying degrees in 23.2 per cent. of all the children examined. This condition is generally attributed to abnormal formation and development of the jaws and associated bones of the face, arising from causes as yet unknown. Research work already instituted may throw some light on this matter.

Members of the profession or others desiring a copy of the complete report may secure it from His Majesty's Stationery Office, London (1s. 6d. net), requesting Special Report Series No. 97 of the Medical Research Council.

TO HARDEN PLASTER.—To six parts of plaster one part of freshly slaked and well-sifted lime is added. When the model is dry it is saturated for two hours with a concentrated solution of zinc sulphate or iron sulphate. A model saturated with zinc sulphate remains white, while iron sulphate imparts to the model a greenish coloration which afterwards becomes blackish.—*Deutsche Zahnärztliche Wochenschrift.*

Cancer of the Mouth and Tongue

ITS CAUSES, PREVENTION, AND EARLY RECOGNITION—A PLAIN
TALK FOR SENSIBLE PEOPLE.

BY JAMES EWING, M.D., NEW YORK CITY.*



CANCER of the mouth and tongue is a common and very often fatal disease. In the year 1922, there were 3,249 deaths from this cause in the United States, nearly all of which could have been prevented if the victim had possessed a moderate amount of easily obtained knowledge as to the causes and early signs of this disease. Since it does not require any particular knowledge of medicine to understand the main facts about the causes and prevention of cancer of the mouth, the American Society for the Control of Cancer believes that it is not too much to expect that every person who values his life will be willing to spend a few minutes in reading carefully the facts here presented, which have been prepared especially for the lay reader, but may well be found valuable to nurses, dentists, and many physicians, who meet with this disease in its early stages, and who should be able to recognize it in its beginning.

Cancers occur on the lip, tongue, cheek, gums, floor of mouth and tonsils, and in each situation they differ somewhat in origin and appearance. While these and other forms of cancer usually occur in persons over 40 years of age, it is a highly important fact that cancer occurs not infrequently in persons between the ages of 20 and 30 years. When the disease does occur in young persons, it tends to run a rapid course. Time is often wasted in recognizing it because of the widespread belief that cancer occurs only in elderly persons. Youth is no guarantee against cancer.

CANCER OF THE LIP.

Cancer of the lip is always of necessity easily visible in its very early stages. Its main cause is chronic irritation, usually from cigars or pipe; sometimes from hard objects carried frequently in the mouth and causing wounds, and occasionally from the constant impact of protruding teeth. Rarely, cancer may develop from single wounds from any source. It is especially frequent in persons with oily skins, who sometimes suffer from frequent sores covering much of the lip, in the disease known to physicians as seborrheic dermatitis, a term used to signify inflammation of the skin involving the sweat glands. In such subjects, no other cause may

*The author is a member of the American Society for the Control of Cancer. Journal of the American Dental Association, December, 1924.



Fig. 1.—Broad superficial ulcerating epidermoid carcinoma of the lip in a subject with seborrheic dermatitis.



Fig. 2.—Early carcinoma of the lip.

be necessary, since the cancer develops on the chronically inflamed area and often over a rather broad base.

Cancer of the lip usually requires some weeks or months to develop into a definite, progressive, malignant disease. Sometimes, a year or more is required. It is important to know that it may exist in a quiescent form for a considerable period, perhaps six months or a year, and then develop rapidly in a few weeks after an injury or irritation. Therefore any thickening or sore or wound of the lip that does not heal promptly should be submitted to examination by a competent physician.

Most cancers of the lip begin as thickened, firm spots, like flat warts, and they may long remain as slowly growing flat warts. Soon, however, the surface of the spot or wart is rubbed off and becomes painful; and finally it ulcerates and bleeds, a stage at which it becomes more dangerous. In cases of seborrheic dermatitis, the recurring or chronic blisters become hardened but lack the warty appearance; fail entirely to heal, and develop into broad flat cancers.

Briefly, one should avoid chronic irritation of the lips, and suspect as possible cancer all sores, wounds and hard, firm spots that persist. Do not wait for them to become painful or bleed. Submit all such conditions to a competent physician at once.

The only disease of the lip that resembles an established cancer is the rare primary sore of syphilis.

Practically all early cancers of the lip can be cured by competent surgery or by the proper use of irradiation.

CANCER OF THE TONGUE, CHEEK AND FLOOR OF THE MOUTH.

The causes of cancer of the tongue are generally (1) the presence of bad teeth, (2) the use of tobacco and (3) the presence of syphilis. The most potent cause is bad teeth. If these three factors could be excluded, cancer of the tongue would largely disappear. They are all avoidable or curable.

The bad tooth conditions include every variety of dental decay, broken, jagged tooth edges, teeth out of line but otherwise normal, pyorrhea, chronic inflammation about the roots of the teeth, root suppuration, and ill-fitting dental plates. All of these conditions act in producing two things: chronic irritation and chronic filth.

Now, all of these abnormalities of the teeth are extremely common, while cancer is comparatively rare. Why do they sometimes, and not always, lead to cancer? It is usually when the jagged teeth are very sharp and irritating, when the irregular teeth are badly out of line, when the pyorrhea is advanced, when the ill-fitting plate has irritated the gum or mucous membrane severely, and when any of these things has existed a long time, and especially when combined with the use of tobacco, and

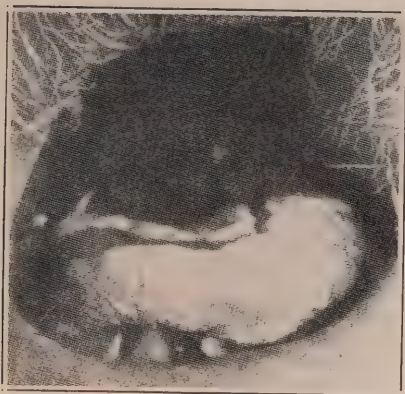


Fig. 3.—Leukoplakia of the tongue.

the existence of uncleanness in the mouth. The victim of cancer of the mouth usually has a long warning, but not always.

To the dentist belongs the task of correcting gross or minute abnormalities of the teeth, to the extent that dental facilities are provided; but the victim of mouth cancer is himself usually largely to blame for permitting the bad teeth and the dirty conditions of the mouth to continue until cancer develops. Experience in a clinic for mouth cancer reveals a most astonishing degree of stupidity and neglect on the part of most of these patients.

Tobacco users add to bad teeth a most effective factor in producing cancer of the mouth. Tobacco juice and, to a slightly less extent, tobacco smoke, seem to have a peculiar tendency to cause cancer, especially when added to the irritation of bad teeth and buccal uncleanness.

Tobacco prevents the wounds and abrasions from bad teeth from healing, and it does not effectively prevent the growth of mouth bacteria.

"Tobacco tongue" is a chronic inflammation of the tongue produced by the continued use of tobacco. The edges of the tongue become reddened, swollen and sore; and the back of the throat may become reddened and covered with little granules. When persistent sores appear on a tobacco tongue, there is danger that cancer may soon follow. All sufferers from "tobacco tongue" should cut down their use of tobacco or stop it entirely.

Tobacco often produces leukoplakia, which is a precursor of mouth and tongue cancer. Tobacco users should know what leukoplakia is as well as they know the different kinds of tobacco. Leukoplakia consists of

whitish, flat spots that form slowly over the surface of the tongue, the cheeks and the floor of the mouth, and persist for months and years, always growing larger and firmer, and finally tending to ulcerate. A large proportion of these chronic leukoplakia spots become cancer, but never without giving the victim a long and definite warning. The remedy is to stop smoking or chewing, or to cut these habits down in the proportion that one values his life. Syphilis and buccal filth aid in the development of leukoplakia, but are not essential.

Syphilis sometimes appears to be the sole cause of a cancer of the mouth or tongue. Syphilis is much more often only an underlying factor in cancer of the mouth that is produced mainly by bad teeth, tobacco and buccal filth. Old syphilis produces scars and fibrous tissue in the tongue, marking out its surface like a map (geographic tongue), or it leaves fissures that do not heal; or ulcers form deep in the tongue, and about them deep cancers develop that are hard to recognize. Many cancers of the tongue and mouth are mistaken for syphilitic sores, even by somewhat careful physicians, who treat the patient for syphilis, heal over the syphilitic part and leave the cancer to grow on unaffected until it is too late. Cancer and syphilis may occur together, but the cancer is by far the more important condition. Rarely does the primary sore of syphilis occur on the tongue and here resemble cancer. When any doubt exists, a small fragment of tissue should be removed for microscopic diagnosis. The ordinary blood test for syphilis (Wassermann test), if positive, cannot be relied on to prove that a sore about the mouth is syphilitic, and not cancerous. The patient may have both syphilis and cancer. Many people lose their lives from cancer of the tongue because this fact is not appreciated by the physician.

A few cancers of the tongue develop from warts on the tongue that have no relation to bad teeth or tobacco or syphilis. Warts on the tongue should always be treated promptly.

Rarely, cancer develops deep in the substance of the tongue, from irritation of ducts of the many mucous glands. These show no surface thickening or ulcer until late, but produce a hard nodule in the tongue. Any persistent lump in the substance of the tongue, however small, should be examined by a competent physician.

The appearance of early cancer of the tongue, cheek, or floor of the mouth, while somewhat varied, is generally characteristic and easily recognized. It shows (1) hardening of a small spot, or (2) a warty thickening, or (3) a superficial sore, or (3) an ulcer that does not heal. All such things should be attended to promptly, for cancer of the tongue often progresses rapidly, and many persons fall into a hopeless condition in a few weeks after beginning of the trouble. Therefore, delay is dangerous. Never allow such a suspicious sore to be treated by nitrate

of silver or other caustic, or be treated as syphilitic, unless microscopic examination of the tissue has shown that the disease is not cancer. Do not rely on general medical inspection of the sore or on the blood test.

Leukoplakia spots develop into cancer slowly, and they then show hardening, a raw surface and, finally, superficial ulceration. On the inside of the cheeks, leukoplakia spots often are injured by the teeth, and these frequent wounds tend to cause them to become cancers.

Cancers of the floor of the mouth and the edges of the gums are not easy to recognize. Doctors and dentists are not on the lookout for cancers in these locations, and they are not easily seen, especially along the back of the tongue, near the back teeth. Cancers of the floor of the mouth generally give the impression of being simple "canker sores," whatever that may mean, since they may spread rather widely, ulcerating slightly on the surface, while the ordinary signs of a hard, cancerous tumor are lacking. Therefore, any sore on the floor of the mouth, along the base of the tongue, or any feeling of discomfort that persists along the sides of the back of the tongue should at once suggest cancer.

Cancer of the gums develops slowly or rapidly under ill-fitting plates. The misfit may be slight. The irritated gum is painful and its surface slightly thickened, rubbed off and finally ulcerated, when the cancer becomes established. All wearers of ill-fitting dental plates, and all dentists in charge of such cases, should be on the lookout for signs of cancer. It is better to discard the plate than to suffer from cancer.

Two other conditions simulate cancer of the gums: 1. Proud flesh, which is overgrown granulation tissue. This is called by physicians "giant-cell tumor," or epulis, the term epulis meaning any tumor on the gums, but usually a harmless one. Such a tumor may be a protruding, bleeding mass on the gum, often appearing after the extraction of teeth. It is not dangerous, but requires treatment. 2. Tumors caused by teeth that have not grown through the gums are rare growths arising from the rudiments of the teeth. They produce swellings of the jaw-bone, which are sometimes first noted on the edges of the gum. All persistent swellings, tumors and sores of the gums and jaw bones should receive the attention of a good physician.

CANCER OF THE TONSIL.

Cancer of the tonsil is one of several diseases that produces chronically enlarged, painful and ulcerated tonsils. Only an experienced physician is competent to recognize cancer of the tonsil, but every person should know that enlarged, sore tonsils may become cancerous. At first, the cancerous tonsil is not so large, or so sore, as the ordinary enlarged tonsil of chronic inflammation. It seldom occurs before the age of 35 years. It is most frequent among tobacco users, especially tobacco chewers,

some of whom form the habit of holding the quid against the side of the throat.

The signs of cancer of the tonsil are hardening and superficial ulceration of a portion of a slightly enlarged tonsil. Cancer almost always affects only one tonsil, while most other diseases of the tonsil affect both tonsils. The hardening and ulceration of the tonsil may not be very marked, but these signs, once existing, are progressive. When such conditions exist, consult a doctor. The disease usually makes rapid progress.

Sarcoma of the tonsil produces a very marked, persistent enlargement of one tonsil, which steadily increases in size, but is not very prone to ulceration. By sarcoma is meant a malignant tumor of the internal or deep supporting tissues. Sarcoma is to be distinguished from carcinoma proper, which is a tumor of the lining cells of the body.

TREATMENT.—Early localized cancers of the tongue, mouth and cheek are nearly always curable by expert treatment. The nature of the treatment should be decided by the physician in charge, but the treatment should be in the hands of one experienced in these diseases. Comparatively few patients with cancer of the mouth region consult a competent physician in the early stages. They delay and temporize with home remedies, or with none.

For late cancer of the mouth region, especially for those in the back of the mouth, the outlook is unfavorable. Hence, early recognition or prevention is absolutely necessary.

MOUTH HYGIENE.

Since buccal uncleanness is the main exciting cause of cancer of the mouth, and since the cleansing of the mouth can be attended to only by the person himself, it is of the utmost importance that everyone should know how to keep the mouth clean.

People who will not attend to their teeth, by periodical visits to the dentist or the dental clinic, and by daily brushing of the teeth, should know that they, and almost no others, suffer and die from cancer of the mouth region.

Many different methods are employed to secure cleanliness of the mouth and teeth. It must be admitted that there is not sufficient scientific evidence to determine which of them is the most effective.

The care of the teeth is a matter belonging to the dental profession. Everyone knows that the teeth should be scrubbed with a brush daily; that running a strong thread (dental floss) between the teeth removes particles of food that the brush cannot reach, and that the use of dentifrices aids to some extent in the cleaning of the teeth. The American Society for the Control of Cancer does not attempt at this time to offer any full explanation of the causes of dental decay, nor any complete

directions for the care of the teeth. Consult your dentist or the dental clinic. Yet, it seems desirable to point out that chemical disinfection of the teeth is an impossibility, and that harm may result from the constant use of irritating, chemical tooth pastes. Mechanical methods must be relied on if the cleansing is to be effective.

It is especially important to emphasize the fact, which is not generally known, that the cleansing of the mouth for the prevention of cancer and many other important diseases involves a great deal more than the cleansing of the teeth, and that merely chemical means are not effective. Several years ago the French government endeavored to get French scientists to devise an efficacious chemical disinfectant for the mouth, and later a commission of the Department of Health of the City of New York made a similar attempt, with the hope of controlling pneumonia, but the effort to find an efficacious chemical disinfectant for the mouth was not very successful, and, therefore, mechanical methods must be employed.

The most generally available, and perhaps the most effective, method of cleansing the mouth, gums, tongue and throat is daily scrubbing of the mouth with a toothbrush and ordinary, mild toilet soap. The soap-suds must be gargled thoroughly until it reaches every part of the back of the mouth; if one scrubbing is not enough, it should be repeated, until the mouth tastes clean.

The reasons why the American Society for the Control of Cancer recommends scrubbing the teeth and mouth with soap and water are as follows:

1. Soap is the best aid to the toothbrush in mechanically removing particles of food, masses of bacteria and mucous from the teeth and the recesses of the mouth. Soap macerates dead epithelial cells, which harbor bacteria, and hastens their removal from the mucous surfaces. It macerates food particles and masses of bacteria. The effect of maceration becomes apparent only after somewhat persistent use of soap. The constant use of soap gargles will even excavate and cleanse the crypts of the tonsil, but it is not recommended as a means of control of established disease of any sort. It is a preventive of disease. Soap is very effective in washing tobacco juice from the teeth and throat.

2. Soap-suds has a considerable bactericidal effect, especially on disease-producing bacteria, and it is probable that this chemical effect is about as severe as the mucous surfaces will stand over a long period. It may be used for a lifetime without deleterious effects, which is more than can be asserted for most other chemical disinfectants.

3. Soap causes a secretion of mucous from thousands of mucous glands that line the inside of the mouth. The mucous secretion is Nature's method of removing dangerous bacteria from the mouth, and protecting the mucous surfaces from penetration by bacteria.

Bacteriologically considered, the mouth is the dirtiest cavity in the body, harboring the germs of many fatal diseases, and allowing various decomposition processes to take place. All of these irritating substances aid in the production of cancer as well as of other diseases.

Too much emphasis cannot be laid on the fact that the prevention of cancer in the mouth rests largely on the individual himself, and is to be accomplished first by the maintenance of cleanliness of the mouth and teeth by the measures above detailed, and, secondly, by the prompt seeking of competent medical advice, if any abnormality in the mucous membranes of the mouth is noticed. It is not too much to expect that, by these two measures alone, the occurrence of cancer of the mouth can be very materially reduced in frequency.

The mouth, as well as the teeth, must be cleansed thoroughly by efficacious methods, if one is to escape the diseases that result from buccal filth.

Soap and toothbrushes are everywhere available. Their cost is negligible. Their use is urged and explained in the public schools. Their employment for the specific purpose of preventing mouth cancer and other diseases calls for a very slight extension of the common customs of people everywhere.

The Scientific Method in Medicine*

A. PRIMROSE, C.B., M.B., C.M. (EDIN.)

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PROGRESS in science has revolutionized the conditions under which we live in modern times. The practical application of discoveries made in science has had its influence on the activities of our daily life, so that, at every turn, we find ourselves reaping the benefit of "the growth of truth" in the contribution of scientific investigators to the sum of human knowledge. In no realm of science is this more evident than in medicine.

Galen (130 A.D.) was one of the greatest anatomists of antiquity. In knowledge of the bones and muscles he far exceeded all his predecessors. He distinguished between cerebral and spinal nerves, the former he considered sensory, the latter motor in function. He disproved the idea formerly conceived that the arteries contained air and he possessed an intimate knowledge of the heart and its valves. His observations were, however, chiefly made from the lower animals and he probably never dissected a human subject. With his death in 193 A.D. was reckoned the downfall of anatomy in ancient times.

The influence of the teaching of Galen was paramount for many

*Extracts from an address delivered before the Harveian Society of London, Ontario.

centuries. For example in the fourteenth century when the School of Medicine of Bologna became celebrated, Mondino who has been described as the "father of modern anatomy" (because he taught solely from the human cadaver) was unable to throw aside the powerful influence of the teaching of Galen. It is interesting to note the views which were held in those days. There was an attempt to localize the function of different portions of the brain; the first part of the "anterior ventricle" was considered the seat of common sensation, in the second part, fancy was bred, in the "middle ventricle" thought, reason and judgment, while in the "posterior ventricle" memory dwelt. There were channels between the ventricles which permitted the passage of "spirits" from one to the other. Blood was believed to be formed in the liver and passed from thence to the heart where "spirit" was produced which formed the link between body and soul. The blood ebbed and flowed in the veins and arteries. The lungs were supposed to receive "smoky vapours from the heart, they were also supposed to expel superfluous matters from the brain through the naso-pharynx, and so an ordinary cold was supposed to be a "purgamentum cerebri." These teachings of course seem crude and grotesque in view of our present knowledge and yet who knows how fragmentary and inadequate our knowledge of the function of the human body may appear to our successors after a few more centuries have passed.

Throughout the history of medicine we may note great "milestones" which not only record a continuous line of progress but often mark a specific junction on the road where a divergence occurs; some bold traveller leaves the beaten path and strikes out into the wilderness of the unknown and there finds rich treasure which revolutionizes the entire conception of human life and activity. Many travellers will persist in keeping to the old path for a time, but, if the revolutionist has discovered truth, the skeptic and the cynic will be forced to abandon the old road, often by painful and devious by-ways, and will eventually take the new path which leads to the haven of broadened outlook with richer promise of achievement.

The advent of Vesalius in the sixteenth century marks an epoch of essential importance in the progress of medical science. He revolutionized the teaching of anatomy. Hitherto the authority of Galen was unchallenged; had remained unchallenged for fourteen centuries in spite of the fact that his writings contained many erroneous conceptions. His writings were accepted with something akin to the sacred respect which is reserved for holy writ. Far be it from me to undervalue the importance of cultivating respect for authority but there is a slavish respect for authority which is exceedingly harmful. The modern scientist is far removed from the credulous individual of the middle ages who accepted the views of Galen without sufficient proof of their accuracy. Vesalius,

however, boldly attacked the doctrines of Galen, and suffered persecution such as is usually experienced, in modern as in ancient times, by those who express views of a revolutionary character. He studied anatomy in the human subject, while swine had hitherto been used for the purpose because of the difficulty of procuring human material. The internal anatomy of swine was supposed to be similar to that of man, a belief which is popular even at the present day.

The bold stand of Vesalius brought down upon him a host of adverse critics, who were most virulent in their attacks upon the man who ventured to question the teachings of the greatest authority of the age. One of his most bitter opponents was his old teacher, Sylvius. But Sylvius got worsted in the controversy and was at last coerced into making certain admissions. He covered his retreat by insisting that the structure of the human body had changed and not for the better; it was deterioration he saw and not improvement although the standard of excellence chosen by Sylvius was Galen's description of the ape.

In the early part of the seventeenth century a new impetus was given to the investigations and development of medicine when William Harvey introduced the experimental method. So much stress is placed on this fact in the life and work of Harvey by his biographers, that many consider his introduction of experiment, for the elucidation of problems in scientific medicine, overshadows in importance the discovery of the circulation of the blood, which latter has made his name immortal.

By the experimental method, and in conformity with the facts deduced from his anatomical studies, Harvey established scientific proof of the circulation of the blood. Harvey's discovery was perhaps all the more remarkable because he had no means of demonstrating the minute channels through which in the tissues the blood passes from the terminal ramification of the arteries to the radicals of the veins. This missing link in the chain of evidence was supplied by Malpighi, who in 1661, with the aid of the newly invented microscope, discovered the capillary circulation in the lung of a frog.

Harvey was for a time physician to St. Bartholomew's Hospital, an institution which in 1923 celebrated its 800th anniversary. He was a great benefactor of the Royal College of Physicians. He had erected for them "a noble building of Roman architecture (rustic work with Corinthian pilasters), comprising a great parlor or conversation room below and a library above." He furnished the library with books and the museum with specimens. Finally he left his estate in Kent to his beloved college and bequeathed a sufficient amount of money to pay the salary of the college librarian and an endowment to provide for an annual oration which is still given on the anniversary of his death. In his deed of gift Harvey exhorted the fellows of the college "to search out and study the secrets of nature by way of experiment, and also for

the honor of the profession to continue mutual love and affection among themselves."

A century after Harvey's death, John Hunter, (1728-1793) a Scotchman by birth, was adding lustre to the cause of scientific progress. He was an indefatigable worker and made many dissections both of human subjects and of a great variety of animals. He is said to have "anatomized" over 500 different species of animals. His enthusiasm in securing anatomical material may be illustrated by the deliberate manner in which he planned to get possession of the skeleton of an individual known as the "Irish Giant." This giant, O'Brien by name, learned during his lifetime that Hunter's eye was upon him, and he, therefore, took precautionary measures, and ordered that, on his death, his body should be carefully guarded by relays of men until a leaden casket could be procured, in which the body was to be placed, and then carried out to sea and sunk. Hunter, however, was not to be baffled. On the giant's death Hunter bought the watchers off. At first they agreed to a dereliction of duty for fifty pounds, but getting that so easily they demanded fifty more, and only ceased to extort when Hunter refused to budge a penny beyond four hundred pounds! The skeleton of this giant may be seen to-day in the Hunterian Museum of the Royal College of Surgeons. Hunter was a physiologist as well as an anatomist and employed the experimental method in his research work. Like Harvey, the reigning sovereign granted him the privilege of experimenting on the deer in the royal parks. In 1785 he tied the external carotid artery which supplies the antler and the soft vascular covering called the velvet. He found that the pulsations in the velvet ceased and the antler which received its blood supply therefrom grew cold to the touch. He debated whether the antler would be shed or would be retained longer than usual. To his surprise he found, a week or two later, the antler had regained its warmth and was still increasing in size. On killing the buck the tied external carotid artery was found to be obliterated, but numerous small vessels had become enlarged under the new conditions and by their anastomosis had carried ample blood supply to the growing parts. Thus became enunciated the principle of anastomotic circulation induced under the "stimulus of necessity" to use the experimenter's own phrase. This discovery was destined to have a far-reaching effect in the practice of surgery.

The introduction of ether for surgical anæsthesia dates from October, 1846, when Dr. Morton administered ether to a patient in the Massachusetts General Hospital, Boston, for the removal, by Dr. John Collins Warren, of a tumor from the neck. There seems to be just claim, however, that Dr. C. W. Long, of Jefferson, Georgia, had used ether for anæsthetic purposes as early as 1842. In fact, his practice was "ether with operation cost two dollars, and ether without operation

twenty-five cents." It is related that when it was proposed to erect a monument to the discoverer of ether at the Boston Hospital, Dr. Oliver Wendel Holmes suggested they should erect a tablet and place the names of Morton and Long in one line, while above would be the inscription "To Ether" (either).

When, in 1847, Sir James Y. Simpson introduced chloroform as an anæsthetic, we are told that his uncompromising advocacy of it in obstetric practice and in surgery gave rise to "the angriest and most widespread controversy of his time." In Scotland and elsewhere it was thought that pain as a punishment should be received in a spirit of meekness; anæsthesia seemed to be an attempt to thwart the divine will. In the pulpit passages were quoted to prove the wickedness of such undertakings. Simpson came back at his critics by suggesting that they had forgotten the twenty-first verse of the second chapter of Genesis, where the first surgical operation was recorded; the Maker of the Universe, before he took a rib from Adam's side for the creating of Eve, caused "a deep sleep to fall upon Adam." The enlightened lay public, of course, gave Simpson their support, in spite of the religious bias created by the suggestion that it was an impious attempt to remove the primal curse on women. Finally opposition faded away when Queen Victoria gave her consent to use chloroform on the occasion of the birth of Prince Leopold in 1853.

The outstanding contribution to medical science in the nineteenth century was that made by Lister. No single individual in the history of medicine has accomplished results so far-reaching and so beneficent in their effect in mitigating the ravages of human suffering and disease. From student days Lister was gravely concerned because of the great mortality attending surgical operations. Erysipelas, pyæmia and hospital gangrene were rife in the surgical wards of every hospital. Lister sought to explain these dread complications in surgical procedures. As early as 1861 he taught that "suppuration in wounds was determined by the influence of decomposition or putrefaction in the discharges" (Stewart). The cause of the putrefaction he did not know. It had been thought to be due to some mysterious action of the atmosphere. Pasteur, who began his epoch making researches as a chemist, became interested in, and finally solved, the problem as to the causes of fermentation. He showed that alcoholic fermentation was due to the vital activity of the yeast plant, a living organism. This led to further research to determine the cause of putrefaction. Here, too, he found vital phenomena, and finally determined the role played by living organisms of microscopic size as the primary cause of putrefactive processes.

Now let Lister speak himself as to the influence of Pasteur's discovery on the problems with which he wrestled. In his original paper in the *Lancet*, 1867, he writes: "Turning now to the question of how

the atmosphere produces decomposition of organic substances, we find that a flood of light has been thrown upon this most important subject by the philosophic researches of M. Pasteur, who has demonstrated by thoroughly convincing evidence that it is not to its oxygen or to any of its gaseous constituents that air owes this property, but to minute particles suspended in it, which are the germs of various low forms of life, long since revealed by the microscope, and regarded as merely accidental concomitants of putrescence, but now shown by Pasteur to be its essential cause, resolving the compound organic compounds into substances of simpler chemical constitution, just as the yeast plant converts sugar into alcohol and carbonic acid." Thus it came about that the germ theory of disease was established and Lister's antiseptic system in operative surgery based upon it, was finally brought to such a successful issue that the entire field of surgery was revolutionized, resulting in the saving of human life and in the prevention or amelioration of human suffering.

We have endeavored in this paper to show how scientific methods have been utilized in advancing the practice of medicine and surgery. We note three distinct phases in the evolution of the scientific method as applied to medicine:

1. Accuracy of observation, an essential feature of all scientific investigation.
2. The experimental method introduced by Harvey in the seventeenth century.
3. The utilization of discoveries made in pure science. Men confronted with problems of disease, by further observation and experiment were able to apply these discoveries in practical medicine. Lister introduced this method when he followed up the work of Pasteur, the chemist and biologist, and evolved the antiseptic system, which revolutionized the whole field of surgery and which proved to be one of the greatest boons ever conferred upon humanity.

Medical education, as it is carried on to-day, is an intensive study to fit a man for scientific research. Every patient is a problem in research. The student to-day is required to pass an entrance examination with honors in those subjects which fit him for an exacting course of six years' duration. The primary years require more time, in order that he may get a sufficient knowledge of the fundamental sciences. The final years are lengthened, because he must be taught to apply the methods of the laboratories of science at the bedside. The university curriculum in medicine to-day must inevitably fulfil the requirements necessary to fit a man to employ scientific methods in the treatment of disease and to utilize the advances made in science from time to time in the relief of suffering humanity.

Canadian Dental Association, Halifax, August 16-19, 1926



IN the article last month we promised to say something this time about programme. It is rather early yet to draw up a definite programme. The number of notable dentists who have promised to attend and assist is steadily growing, and we are already assured of the attendance of many outstanding figures in Dentistry. Those who have promised to give papers, clinics, etc., include: Dr. A. E. Webster, Dr. I. H. Ante and Dr. W. E. Cummer, of the Faculty of Dentistry, University of Toronto; Dr. F. J. Conboy, of the Ontario Department of Health; Dr. Thaddeus P. Hyatt, of the Metropolitan Life Insurance Company; Dr. Evangeline Jordan, of Los Angeles; Dr. Louise Ball, of the Dental Health Foundation of New York; Dr. Billy Smith, of the instructional staff of the S. S. White Company, Philadelphia, in clinics on the Wadsworth articulator; Dr. W. D. Tracy, of New York; Dr. T. P. Hinman, of Atlanta, Georgia.

Dr. F. R. Mallory, now of London, England, has presented the Association with a beautiful cup for a golf competition during the meeting. The Entertainment Committee are arranging for competitions, of which announcement will be made later. There are two splendid eighteen hole courses within easy reach of the buildings where the meetings will be held.

The Exhibits Committee are rapidly filling up the space which they have available. These will all be housed in one building and alongside one another, and as the leading Canadian dental companies and quite a number of the United States companies in the Eastern States have asked for space, it will be an interesting part of the meeting.

If you have not yet arranged for your hotel accommodation, do it early. If you have any difficulty in this connection please let us know. There are two large University residences, delightfully situated on the shore of the famous Northwest Arm, which can be used if necessary. The three largest hotels are the Halifax, the Queen and the Carleton. In addition to these there are a number of smaller ones. There is plenty of available accommodation for a large convention, but since the meeting is being held during the tourist season we would strongly suggest that you make early reservation, and if we can assist in any way please let us know.

Don't forget to ask for any tourist information in the way of maps, booklets, etc., of the Maritime Provinces, which will help you to plan your vacation trip. Take this opportunity of making this trip to the seaside Provinces, which you have been promising yourself, and make

it a real trip while you are at it. If you come by car you will find the roads good and we will be very glad to help you plan your trip, so that you will be able to take in at least some of the points of scenic beauty. If you want to add golf, fishing or a stay at some seaside resort to your trip, why not make your plans now to do it?

J. STANLEY BAGNALL,
Sec.-Treas., Canadian Dental Association.

34 Larch Street, Halifax.

“See Canada First!”

 HE Canadian Dental Association have decided on August 16th to 19th, 1926, as the date for their convention.

This time of year is the period when we think and dream of our summer vacation, and while the snow is on the ground we always begin to plan where we will spend our holidays. The convention will be held this year on the Atlantic Coast, at Halifax, N.S., and any who visited the Pacific Coast in 1924 will be anxious to learn of the pleasant trip which has been planned to continue our “Seeing Canada First.”

An itinerary has been completed whereby a boat and train trip has been combined, so that the party will enjoy the trip to the fullest extent.

An outline of the itinerary will be:

A boat trip starting at Toronto, via the Canada Steamship Lines, through the Thousand Islands to Montreal, where one day will be spent; thence down the St. Lawrence to the Saguenay River, past Tadousac to Chicoutimi, where the scenic beauty and wonders of nature are at their best.

Arrived at Quebec, we will spend two days looking over the historical spots, including the location of the story of The Golden Dog.

Then at midnight we leave via the Canadian National Railway and travel over the old “Intercolonial” along the St. Lawrence River, awakening in the morning in the Metapedia Valley. We travel all day through the scenic Valley and pass through many areas of rare beauty, travelling through Moncton, Truro, and on to Halifax.

Our sojourn here will be broken by numerous side trips by automobile through the land of Longfellow’s “Evangeline,”—Grand Pre, Wolfville, the Annapolis Valley, Digby and Yarmouth.

Returning, we will leave Halifax for Digby, board the steamer for St. John, N.B., where a day will be spent amidst different points of interest, among which will be the Reversible Falls. Then by steamer up the St. John River to Fredericton, C.N.R. by direct route to Que-

bec, steamer via Canada Steamship Lines to Montreal, railway to Prescott and boat again through the Thousand Islands to Toronto.

A definite schedule of itinerary and rates will be published at an early date.

Any information desired may be obtained from Dr. C. A. Kennedy, 86 Bloor St. W., Toronto.

Common Sense



COMMON sense is not an intellectual acquirement, though very often it seems to transcend intellect. In fact, judging from the sallies of the comic weeklies, we may believe that exalted intellectual sense often tends to breed common sense out of the genus Homo, says "What the Colleges are Doing." Certain it is that intellectuality to the nth degree has come to be accepted as one of the most unsocial of human acquirements, in that it loses for itself and would deny to others the sense of our altogether too common human frailty.

Common sense in many respects is like electricity. It is not easy to say what it is, but we all like to see it work. It may be tentatively defined as an attitude toward life, born of native intelligence and good will, and accompanied generally, perhaps inevitably, by a sense of humor and a temper that cannot be ruffled. The man of common sense does not get mad, does not get scared, and does not take himself too seriously. These facts inject into our perspective a legitimate doubt as to whether common sense can be consciously acquired, though common belief readily enough admits that it can be knocked into a man by hard experience. The editor modestly submits, however, that an experimental course in common-sense adjustment to things as they are offers material for an excellent introduction to four years' constructive college work, in that such a course could embrace not alone the intellectual aspects of the case, but also the emotional and ethical reactions which test even more searchingly the fiber of the college pretender to the aristocracy of brains.

Reduced to its lowest terms, common sense may be apprehended as little more, surely nothing less, than a fine sense of proportion, necessarily blended, as we have said, with a sense of humor. Your common-sense individual is seldom, if ever, a grouch or a misanthrope.

The Greek prescription for common sense was the classic aphorism "Be overzealous in nothing," or some have translated it, "Do nothing too much." Academically applied, this may mean, do not work too much, do not play too much, do not generalize too much, do not specialize too much, "do not think of yourself more highly than you ought to think," do not be overmodest or self-effacing.



PUBLIC HEALTH SERVICE

FOR THE PEOPLE ~ BY THE STATE

This Department is Edited by
FRED J. CONBOY, D.D.S.,

Director of Dental Services, Province of Ontario.



Dental Health a Community Asset

C. N. JOHNSON, M.A., D.D.S., M.D.S., CHICAGO.



THE Board of Education of the City of New York estimates that it costs the city more than a million dollars per year to teach the "repeaters" in their schools—those children who fail and have to take their grades over again. They conclude that 80 per cent. of these failures are due to physical defects, most of which belong to the mouth and teeth. If one half this enormous sum were spent annually in detecting dental diseases in their incipency and checking them, it would not only save most of this outlay by preventing "repeaters," but it would contribute largely to the better physical condition of the children generally and greatly increase their vigor and efficiency. There is no longer any doubt of the definite value of a healthy mouth in a growing child. The pronounced improvement in groups of children where dental care has been given them, even after the ravages of decay have had a start, is an eloquent object lesson on the virtue of such service. Children have been changed from careless, listless, indifferent and backward pupils, to bright and responsive children just through the medium of dental care.

Human health is the greatest asset that any community or commonwealth can possess, and one of the chief factors in maintaining health is the condition of the mouth and teeth. The keynote of the hour is the prevention of disease. If we would prevent all the preventable diseases, the money thus saved would run our governments and pay off annually a large part of our national debts. The most expensive thing is illness, to say nothing of the suffering and sorrow that go with it.

The most prevalent of all human diseases to-day is decay of the teeth, and still we permit the children of the poor to grow up all about us with this physical handicap to their future efficiency. The prevention of the decay of the teeth is not wholly in the hands of the dentists

—there must be co-operation on the part of the people themselves. In order to enlist this co-operation the people must first be educated, and the most effective way to reach the people is through the medium of a department of the government. If a representative of the government takes a message into a community, it at once commands attention and respect, whereas if a private individual attempts to convey such a message it is likely to be received with indifference.

Our legislatures and boards of health and education can do no better service to the people than to direct them in the way of preserving their teeth. Money appropriated for this purpose is like the bread cast upon the waters—it will return after many days in increased vigor and efficiency for the people. The Province of Ontario has made a pronounced impression on the dental profession of the world by appointing a Director of Dental Services to operate through the Department of Health. This is construed as concrete evidence not only of the significance of dental health, but of the far-sighted character of the Legislative body of Ontario. Congratulations are due to the Legislature, and particularly to the people of the Province.

* * *

The Dental Health Day



VERY fine progress is being made in connection with the arrangements for the Ontario Dental Health Day, October 20th, 1926. The members of the Ontario Medical Society have very kindly promised to support this effort and a number of the County Societies will co-operate with the dental organizations. The Women's Institutes and the Red Cross Societies intend to take an active part and many service clubs have offered to provide prizes for the various contests. The Department of Health has sent letters to all the nurses, outlining the organization and requesting them to start now to plan for this day, and a notice requesting the support of the school teachers and having the endorsement of the Ontario Department of Education will appear in the preliminary programme of the Ontario Educational Association.

The dentists in each municipality should now begin to prepare for their part of the work. They should meet together and discuss the matter, then call in for joint conference the medical officer of health and other physicians, the school or community nurses, the school principal, the president of the Home and School Club, Women's Institute, local Red Cross Society, or any other organization engaged in child welfare work. The presidents of Rotary, Kiwanis or other service clubs should also be invited, and the clergymen and newspaper editors must not be neglected.

The Dental Inspection of School Children



It has been very difficult to carry on the Province-wide dental survey during the winter months. The dentists put their cars away during the cold weather and consequently could not visit the rural schools. The children in a number of the cities and towns have been inspected and permanent school dental services started in some places. We desire to remind the dentists of Ontario that the Dental Branch of the Department of Health will provide the necessary material and arrange for a survey in any part of the Province where the dentists are willing to give their time gratuitously to inspect the children, and the Director of Dental Services will also do his utmost to assist in the organization of a permanent school service.

* * *

Requests for newspaper articles, Oral Hygiene literature, slides, charts, etc., for use in Ontario, should be sent to the Director of Dental Services, Spadina House, Toronto 5.

Dental Nurses' Association

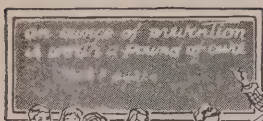


THE Ontario Dental Nurses' Association are holding their fourth annual convention at the King Edward Hotel, Toronto, during the same week as the Ontario Dental Association Convention. It is the hope that members of the profession will arrange to allow their Nurses or Assistants to attend this meeting, where it is possible to do so.

A good programme is being planned, the details of which will be published at a later date.

TO TIGHTEN A VULCANIZER.—Ordinary newspaper is boiled for from five to ten minutes until it has become quite soft, and is pressed in this condition into the groove of the lid on the old leaky ring. The lid is then screwed on tightly. After the vulcanizer is used once, this paper mass is quite hard and tightens perfectly. Any excess of paper mass is cut off.—*Deutsche Zahnärztliche Wochenschrift*.

Our own method is as follows: We French-chalk the indiarubber packing, put the lid in position, turn down the centre-screw lightly—not tightly—upon it, and when the steam is up we give the centre-screw a further very slight tightening turn with the spanner. By working in this way we never strain any part of the vulcanizer, the indiarubber packing is not injured, and lasts for years.



School Dentistry

This Department is Edited by

EDMUND A. GRANT, D.D.S.

*Director of Dental Services—Department of
Public Health, City Hall, Toronto.*



We are anxious to receive for publication in this Department reports of work carried on in School Dental Centres anywhere in Canada. Papers on any phase of Pedodontia would also be welcome.—E.A.G.



Ontario Educational Association Annual Convention



THE annual convention of the Ontario Educational Association will be held in Toronto during the Easter holidays, commencing Monday, April 5th. School dental officers throughout the province will be interested in the sessions of the School Health and Physical Education Section, where they have an opportunity to meet with school medical officers, nurses and physical training instructors.

The full programme of this section will appear in the March issue, but two special features might here be mentioned. On Easter Monday evening this section will put on a health education display in the auditorium of the University of Toronto Schools, corner of Bloor and Spadina. Dr. J. C. Livett is arranging for the little playlet, "The Bad Baby Molar," to be presented at this entertainment.

Mr. Willis A. Sutton, Superintendent of Education for the city of Atlanta, Georgia, who is to be one of the speakers for the general session on Tuesday evening, will also address our section on Tuesday morning. Mr. Sutton has taken a special interest in school dental service and what it can accomplish for the school children. His address before the last convention of the American Dental Association was one of the most outstanding of the meeting. We are very fortunate in being able to secure Mr. Sutton for this meeting, and are greatly indebted to the Oral Hygiene Committee of the Ontario Dental Association for some financial assistance in making this visit possible. No dentist engaged in oral hygiene work can afford to miss hearing Mr. Sutton.

Those who expect to attend are asked to communicate with Dr. Walter Manning, chairman of the dental section, 132 Main Street E., Hamilton, Ontario.

* * *

Some Outlines for Oral Hygiene Talks to Children

PREPARED AND SELECTED BY SURVEY STAFF, TORONTO SCHOOL DENTAL SERVICE.

TO PRESERVE THE TEETH

 HATEVER promotes good health will help towards the building up of good, sound, healthy teeth.

1. Fresh air.
 2. Sunshine.
 3. Properly selected nutritious foods, with thorough mastication of these.
 4. Healthy surroundings at all times.
 5. Plenty of sleep.
 6. Good habits.
 7. Brushing teeth properly at least twice a day, morning and night.
- Aim of dentistry to-day is to prevent tooth decay rather than repair the damage after it is done.

* * *

FOUR WAYS TO HELP US TO HAVE GOOD TEETH.

 O remember: 1. To brush our teeth at least twice a day (morning and night), and to brush them in a proper manner.

2. To eat and masticate thoroughly hard foods, and especially so after eating soft foods. This will exercise the teeth, and also help to keep them polished and clean. (Crusts from outside of bread.)

3. To eat certain foods in large amounts which contain the vital substances necessary in the building up of hard and strong teeth.

1. Plenty of milk.
2. Green vegetables.
3. Greens.
4. Fresh fruits, etc.

4. To visit the dentist at least twice a year and have teeth carefully examined, and so avoid having large cavities, because these weaken the tooth structure, are often painful to treat, and may often lead to further complications.

WHY SOME TEETH ARE CROOKED.

IT is just as important for the baby teeth to come in straight and in their proper places as it is for your second or permanent teeth to do so. Many permanent teeth come in crooked because of—

1. Early loss of baby molars and other baby teeth.
2. Early loss of six-year permanent molars.
3. Thumb and finger sucking.

This narrows the mouth, because it forces upper teeth out and lower teeth in.

4. Mouth breathing.

If you breathe through the mouth, the muscles of the nose are not used enough to develop properly the upper part of the face. Through the mouth being kept open the contraction of the cheeks causes the face to become long and narrow, forcing the upper front teeth to extend outwards; there is a shortening of the upper lip, and the lower teeth become crowded. Mouth breathing is generally caused by growths in the nose or throat, abnormal tonsils, adenoids, etc. Such obstructions should be removed as soon as possible.

* * *

SIX-YEAR PERMANENT MOLARS.

IT is most important to keep all the baby molars in place until the six-year molars are in their proper places. These are the first of the permanent teeth to come through the gums, and their proper place is just behind the baby molars.

If you lose your baby teeth too early, the six-year molars will push forward into the space left by the baby molars, and thus will crowd some of your other permanent teeth out of line when they come through the gums.

The six-year molars are the largest and most important teeth of your second or permanent set.

On the other end of a railroad track we often find what is called a "bumper."

The bumper keeps the cars from leaving the track.

Your six-year molars act as bumpers for the other permanent teeth.

They cause the other teeth to stay on the track and come in their proper places.

Thus, if you lose the six-year permanent molars,

1. The other permanent teeth will come in out of line, and this will change the form of the face.

2. When you bite, the teeth will not come together properly, and this will make it harder for you to cut and grind your food.

WHY WE SHOULD RETAIN DECIDUOUS TEETH UNTIL NORMAL TIME FOR THEIR LOSS.



If deciduous or first teeth are lost too early:

1. Child is caused unnecessary toothache and pain.

(a) Interferes with nervous system.

(b) Interferes with digestive system.

(c) Interferes with proper sleep.

2. Interference with proper development and growth of jaws.

(a) Irregularity of permanent teeth.

(b) Features not developed properly.

3. Decayed teeth cause bolting of food through failure to chew the food properly, owing to pain while chewing.

4. Temporary teeth act as guide to the six-year molars, on which will depend—

(a) Proper arrangement of teeth in arches, so that grinding surfaces fit perfectly into one another and give an efficient masticating apparatus.

5. All temporary teeth act as guides, and help to guide permanent teeth into place.

Thus on these will depend to a large extent:

1. Safety

2. Beauty

3. Usefulness of the teeth.

* * *

WHY WE NEED TEETH.



In order to help us speak properly.

2. As an aid to our facial appearance.

(a) Teeth help to form your face.

(b) They make you look young or old.

People who lose them look old.

If all the teeth are present and in normal position the face will assume lines of beauty.

3. Are necessary in order to masticate our food properly. Must have something with which to cut and grind the solid food before it enters the stomach.

4. In order to have good health, which tends to our happiness in middle life, helping us to avoid many ailments from which many people suffer, due to neglecting their teeth in early life.

How Your Teeth Do Their Work.

Each tooth has its own work to do in the cutting and grinding of the food, and hence the necessity of keeping them all and having them in their proper places.

Each tooth is so shaped that it can do its work, and that is why they are of different shapes and sizes.

Your *front teeth* are used to cut the food.

Your *cuspid* or *eye teeth* at the corners of the mouth act as guides, and prevent your jaws from going too far to the side when you chew. They also help to separate the food into shreds.

Your *biscuspid* teeth, with double pointed ends, tear apart the food and crack up hard, brittle food.

Your *back* or *molar teeth*, with broad, biting, crushing surfaces, are the grinders. They work like millstones, and crush and grind the food.

Be sure to chew your food thoroughly. Your teeth were made for use. The more you use your teeth in chewing the stronger they will become, but *don't use your teeth for a nutcracker*.

The First or Baby Teeth.

They are twenty in number, ten in the upper jaw and ten in the lower jaw, and appear in the following order:

Four central incisors between the 5th and 8th months.

Four lateral incisors between the 6th and 10th months.

Four first molars between the 11th and 16th months.

Four cuspids between the 14th and 20th months.

Four second molars between the 20th and 36th months.

The lower teeth usually appear a few weeks earlier than the corresponding upper teeth. Thus by the time the child is three or three and one-half years old it has all of its baby teeth.

Why You Should Take Good Care of the Baby Teeth.

1. They are necessary to chew your food properly until you grow big enough for your larger or permanent teeth.
2. They act as pathfinders for your permanent teeth. They form a roadway for your permanent teeth, and guide them into their proper places, as the permanent teeth form at the roots of the baby teeth and grow into their places. Therefore the baby teeth should be kept until they loosen naturally and are pushed out of the gums by the permanent teeth. If any of the baby teeth are lost before the proper

time, the big permanent teeth will not have room to come through the gums into their proper places, because, when a baby tooth is taken out, the jaw tends to shrink and close up the space that is left. Thus many of the permanent teeth are crowded out of line and become crooked teeth.

3. Thus the baby teeth are necessary to help develop the jaws of the growing child, and so prepare a place for future permanent teeth.

* * *

"THE D. KAY BROWNIES"



TELLING the story of a row of little marble houses that were broken into by a robber band of mischievous brownies. Inquire then:

What are the marble houses? Teeth, of course!

What are robber brownies? Germs, of course!

Then a policeman with a stubby beard appears, to chase the robber brownies away. He comes the first thing in the morning and the last thing at night.

Who is the policeman? A toothbrush, of course!

What will happen if the policeman doesn't come?

The robber brownies make holes in the teeth, and the owner of the marble houses has a toothache.

Therefore—

You better scrub an' clean 'em,

And mind what you're about,

For the toothache'll git you

Ef you

Don't

Watch

Out!

* * *



IN our instructions to the children we must insist on cleansing the teeth at night. Much of the general "toothbrush" propaganda has been directed at getting children to brush their teeth in the morning. The night cleaning, to my mind, is

much more important. We tell the children: "Cleaning your teeth *at night* is for your *own* sake; cleaning them *in the morning* is for appearance's sake. During the day the chewing of food, movement of the tongue and continual activity of the mouth give the micro-organisms little opportunity to do harm; but at night, when our mouths are quiet, they work and do damage while we rest."

THE THREE R'S OF ORAL HYGIENE—ROTATE, RINSE, RUB.

HOW many times in practice do we ask the question: "How do you use your toothbrush, and do you rinse your mouth well and brush your gums?"; and as many times comes the answer: "I brush my teeth up and down and in all directions, but I never knew about brushing my gums. Why should I brush these?" Or again: "I try to sometimes, but they bleed when I do, so I keep away from them. Yes, I take a little water to wash out the paste."

I think, if you ask nine out of ten patients these questions, you'll get the same answers, or the feeling that the patient is under the impression that you are wasting his time with unnecessary questions, and as he has had his teeth cleaned every year or two, in about twenty minutes, and never been questioned, what's the use?

If he could realize that if he had learned the three R's of oral hygiene along with his three R's of elementary education, how much discomfort he would have been saved!

A sentence or two back I used the phrase, "What's the use?" Thus the patient says and thinks.

His teeth hurt to get, to keep, to lose; but if he can be educated to know there is nothing complicated about healthy mouths if we take the simple necessary care of them, we'll grow old with pretty good sets of teeth, keep our chins and noses from becoming too friendly, and do without the lines that come—except those of laughter and good-nature and Nature's etching of experience.

We use our *three educational R's* daily! "What's the use" of the *three health R's*?

Rotate your toothbrush		Hard gums
Rinse your mouth	to get	Healthy teeth
Rub your gums		Hygienic comfort

All the wild ideas of unbalanced agitators the world over, in their ignorant and pitiable quest for happiness through revolution, confiscation of property, and crime, cannot overthrow the eternal truth that the one route to happiness through property or government is over the broad and open highway of service. And service always means industry, thrift, respect for authority, and recognition of the rights of others.—
W. G. Sibley.

To have high ideals won't avail much unless you are prepared to do a lot of hard hiking and climbing.

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MARITIME PROVINCES.



HE regular monthly meeting of the Halifax Dental Society was held on January the 19th. The programme for the evening consisted of a group discussion of Full Denture Impressions. The discussion was opened by J. Stanley Bagnall, who gave a brief outline of the problems involved in taking full denture impressions, and of the various schools of thought which have arisen and the different methods used by them. He was followed by Dr. S. G. Ritchie, who gave an outline of the compound-plaster veneer method which he felt gave him the best results. The meeting was then thrown open to general discussion in which many of those present took part and brought out a number of valuable points. This method of handling a subject was developed during the past winter and has met with splendid results. When the programme is made up at the first of the season, some points of general interest such as this are selected and two or three men, interested particularly in the subject, are named by the committee to open the discussion. Each of these is supposed to take a definite phase of the field and talk for about fifteen minutes on his part of the programme. We can certainly recommend this method, especially for those societies where there is not such a large number of members that it is easy to get speakers for subjects.

The next meeting will be held on February 16th, when the Society will be addressed by Dr. Boris Babkin on "Saliva." Dr. Babkin was associated for a number of years with Dr. Pavlov in his work on digestion and is to-day recognized as one of the greatest living authorities on "Saliva." With these qualities he associates the even more valuable gift of being able to talk on his subject in a way that his audience can appreciate.

Another notable meeting of the near future is a joint meeting of the Halifax Medical and Dental Societies. The programme for the com-

bined meeting consists of a paper on "Dental Abnormalities," by Dr. W. W. Woodbury, and one on the "Relation of the Infected Tooth to Systemic Disease," by Dr. J. Stanley Bagnall.

* * *

Dr. D. E. Green, Dal., 1925, who has been at the Rochester Infirmary since graduation, has taken over the practice carried on for many years by Dr. Polly, of Lunenburg.

J. S. B.

* * *

MANITOBA.



THE annual meeting of the Manitoba Dental Association was held in Winnipeg on Jan. 11, with President Dr. J. F. Taylor in the chair. His report, with those of the Secretary and Registrar-Treasurer, showed definite progress, particularly in reference to curtailment of obnoxious advertisements. The Association is in a healthy condition financially. The work of the educational committee since its inception has been an education to the members themselves, as well as to the public, with the result that the request of the committee for about \$1,000.00 for 1926, to include newspaper material, was passed without objection. The educational committee itself was enlarged, and is now composed of: Drs. D. A. McCarten, Douglas Brown, James Dow, J. G. Elsie, F. E. Warriner, Manly Bowles, A. E. Proctor, Basil E. Brownlee, Roy Bier, H. C. Hodgson, B. Toombs, C. J. F. Jackson, of Winnipeg; C. A. Powers, of Brandon; G. E. Bray, of Morden; W. Dalzell, of Portage la Prairie, and G. C. J. Walker, of Dauphin.

The question of licensing oral hygienists created considerable discussion, but no action was taken. The meeting unanimously supported a resolution to support Alberta in its fight against Mr. Lees, of Edmonton, who is appealing to the Privy Council of Great Britain on the claim that he does not need to be a licensed dentist to make artificial dentures, and who has been fined for so doing.

The opinion of the meeting was decidedly in favor of legislation being obtained to incorporate the Dominion Dental Council with licensing powers similar to those held by the Medical Association, and a motion was passed accordingly.

Drs. F. J. Taylor and C. P. Banning retired from the Board, and Drs. C. H. Moore and W. W. Wright were elected as new members. The Board is now constituted as follows: President, Dr. H. J. Merkeley, Winnipeg; Vice-President, Dr. E. H. Clark, Minnedosa; Secretary, Dr. J. F. Morrison, Winnipeg; Registrar-Treasurer, Dr. W. W. Wright, Winnipeg. Member and representative on Dominion Dental Council, Lt.-Col. H. A. Croll, of Souris.

Mr. S. A. Blair, manager of Ash-Temple Company, has severed his connection with the firm. Mr. Blair has occupied a very prominent place in civic affairs, and also in provincial politics, and it is hoped that his future work will make it possible for him to continue to reside in Winnipeg.

Mr. E. Potter has also retired from the Ash-Temple Company.

W. W. W.

* * *

ALBERTA.

AHE Board of Directors of the Alberta Dental Association held a regular meeting in Edmonton on January 4th, 1926. The following has been selected from a large volume of business before the board as being of general interest to the members of the Association.

1. *Circuit Clinics*.—On account of the success of this plan last year, the board has voted a sum of money not to exceed \$2,000.00 to be expended during 1926 in clinics to be given in the four principal cities of the province. Full denture work and radiodontia were thought to be the subjects most desired.

2. *Dominion Dental Council*.—The following resolution was passed unanimously: "That we, the Board of Directors of the Alberta Dental Association, instruct our D.D.C. representative that we feel that the D.D.C. should be incorporated under a Dominion Act of Parliament, and be built up into a stronger and more useful organization, to become of greater value as a general licensing body for our Dominion."

The representative was instructed to send this resolution to the secretary and provincial representatives of the D.D.C. and the secretary of the various agreeing provinces, urging that action be taken along similar lines.

3. *Western Canada Dental Association*.—It was reported that prospects were bright for the consummation of this scheme, with the probability of a meeting being held in 1927, in Alberta or Saskatchewan.

4. *Unlicensed Practitioners*.—The Secretary handled a number of cases very efficiently and successfully during the year. One case, reported on elsewhere, is still being fought in Alberta courts, and application has now been made by the defendant to carry the case before the Privy Council at London. Whether this will be done will be decided by the Supreme Court of Alberta in February.

5. *Appointments*.—Dr. A. B. Mason was reappointed representative to the Senate of the University of Alberta, and Dr. John W. Clay appointed provincial representative to the Dominion Dental Council.

6. *Resolution re Province of Quebec.*—"Whereas graduates from dental schools in the Province of Quebec are free to take any Canadian Provincial Dental Board examination and obtain licenses to practise while the Dental Act of the Province of Quebec absolutely forbids the admission to examination or practice of graduates of other than Laval or McGill Dental Colleges; and whereas the students of Alberta University Dental Department, on completion of their course in any Canadian university, will not be allowed to enter the Province of Quebec at all; therefore be it resolved that, to equalize the state of affairs, the Senate of the University of Alberta use the power it has under the Alberta Dental Act, and in future refuse to extend the privileges of our Dental Board examinations to graduates of dental schools in the Province of Quebec." This does not refer to dental courses, but to prohibitive dental legislation passed by the Dental Board.

It was decided that the Secretary send a copy of this resolution to the secretary of all other Provincial Dental Boards, with a request for co-operation along similar lines.

J. W. C.

Annual Convention of the Ontario Dental Association



THE Annual Convention of the Ontario Dental Association will be held at the King Edward Hotel, Toronto, May 17, 18, 19, 20, 1926. An excellent programme of essays and clinics has been arranged and a special effort has been made to provide material that will be of practical use in every day practice.

The Committee in charge is extremely anxious to have a large advance registration, and the preliminary programme with the registration form will be contained in the March number of "*The Booster*." In case a dentist registers and then finds that he cannot attend, the fee will be returned. The Association is anxious to have a complete mailing list, and the secretary would like any dentist who is not receiving *The Booster* to send his name and address to him at Spadina House Toronto 5.

Dentists practising outside of Ontario always receive a cordial welcome at our meeting.

FRED. J. CONBOY,

Secretary, Ontario Dental Association

Spadina House, Toronto 5.

Genius begins great works, labor alone finishes them.—Joubert.

The COMPENDIUM

This Department is Edited by
THOMAS COWLING, B.A., D.D.S., Toronto.



RYE BREAD AS AN AID IN PROPHYLAXIS.

THE Swedes have for a long time been noted for their physique, health and mental acumen. Dentists who have examined the teeth of immigrants from Sweden frequently comment upon the splendid condition of all the oral tissues. That this should be the case is rather remarkable, because dentistry in Sweden has never been particularly outstanding. An investigation into the food habits of these people, therefore, should be interesting to all students of preventive dentistry.

The main item of food for the people of Sweden is rye bread. This bread (Ryita Crispbread) is prepared in the form of oblong biscuits. Commenting editorially upon this particular kind of bread, *The Dental Record* says:

"It is pleasant and crisp to eat. Its fibrous character is said to be an actual aid to the operation of those functional processes by which all the food we eat must be digested and assimilated, and its waste evacuated. The bread is stated to be digestible, nutritious and a foe to constipation. Whether it fulfills all these conditions we do not know, but we have no hesitation in saying that it does not cling round the teeth like our soft bread, and that we have found it palatable and digestible."

In our country little rye is grown, but an effort should be made to test out this particular kind of bread, if it holds any possibility of improving our present methods of dental prophylaxis.

INEFFECTUAL REMEDIAL MEASURES.

SUCH problems as dental caries and pyorrhea have attracted the attention of the best minds both in dentistry and medicine for many years, but it must be admitted that the measures of offence and defence available for the dentist are but little improved. Vast sums of money have been devoted to research and

the brightest intellects conscripted for the work, but so far the results have been rather disappointing. The reason for this may be due, in part, to the fact that our efforts have been too localized.

When the water in the well becomes contaminated, various methods of purification may be adopted. We may dip out some of the water and subject it to treatment before using; or, we may attempt to purify the entire source of supply in the well itself; or, again, we may search out the sources of the well's supply and purify the water at its source. Any of these measures are good, but obviously that treatment which corrects the condition at its source will be productive of the best results. The time has arrived when dentistry must not be confined solely to the treatment of the conditions in and about the teeth. It has been said of the profession of Medicine that its field of study extends even beyond the local area of the human organism. Why then should the study of Dentistry be restricted only to the teeth?

In a paper read before the Missouri State Dental Association, Dr. Clinton C. Howard, of Atlanta, Ga., shows that it is possible to correlate well-known mouth deformities with body anomalies. "The next and greatest advancement in dentistry," he says, "will result from our broader study of the influence of body growth and general tissue changes upon the normalcy of the total oral structures and associated parts."

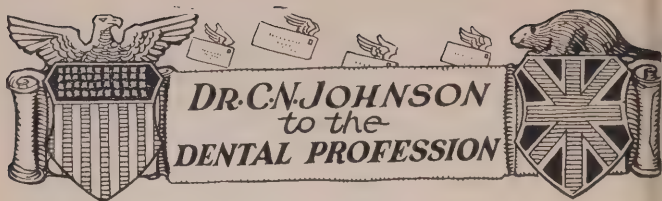
Orthodontists have become interested in the possible relationship existing between internal secretions and various orthodontic abnormalities. Many students of this subject claim that it is now possible to relate a certain large group of maldevelopments of the oral cavity to ductless gland function. The oral cavity, they claim, is under the same influence as are the other regional portions of the body. There are many forces or influences outside the buccal cavity which influence the growth, development, eruption, formation and decay of the teeth. Orthodontic changes are especially present in such conditions as acromegaly, cretinism, and pituitarism. Late eruption of the teeth is often noticeable in cretinism or congenital hypothyroidism. A child who does not have the first tooth at the age of eight months is probably a hypothyroid baby and should be subjected to thorough examination in order to determine whether or not the thyroid gland is functioning normally. The late eruption and malposition of the permanent teeth, especially the laterals and cuspids, might indicate that hypothyroidism existed during the eruptive age of the teeth.

In the discussion of Dr. Howard's paper, by Dr. Wm. Engelbach of St. Louis, a very interesting observation was made as follows: "note," said Dr. Engelbach, "that Dr. Howard refers to supposed normal individuals who have a congenital absence of a number of

teeth. It is a question in my mind whether these individuals are normal. Indeed, the very fact that they have a congenital absence of one or more teeth is very suggestive of some abnormality in growth and development, and it is probable that if they were closely examined and interpreted other striking evidences of anomalous growth and development could be demonstrated. We have noted particularly that hypogonadisms in the female (ovarian insufficiency) have a very small lateral incisor or sometimes a congenital absence of the cuspid, and we always suspect an insufficiency of the generative organs when one or more of the tooth buds are not laid down in the embryologic age, so as to appear at the normal time in the development of the individual."

It is obvious then that in the department of Orthodontia, inquiry must be made beyond the confines of the oral cavity. The entire body organism is to some extent involved. If we take up the question of calcium metabolism and its relation to dental caries and tooth structure the same need for general investigation is at once apparent. Read the opinion of Dr. A. P. Mathews, of Cincinnati, as given in a paper read before the Minneapolis District Dental Society: "The study of a very simple process, the crystallization of calcium salts in the body to form the mineral substance of the bones and teeth, involves the most important and profound problems of the nature of life. It is not alone the bones which must be studied, but the nervous system, the blood, animals and plants widely removed from mammals; even geology is called upon to tell what it knows of the deposition of the salts of lime in the seas of the world. Glands far removed from the bones are seen to be involved; the parathyroids and the reproductive organs—for that these are somehow concerned in metabolism is known to all. The deposition of lime salts in bone is no simple process; for the human organism is a unit and every part of it is concerned. Calcium does not act alone, but it is one of many minerals of which the balance has to be very carefully preserved; the processes of the secretion and excretion of calcium and phosphates must be known. Finally the sun itself comes into the problem; the nature of light and how it is acting. Our bones are precipitated by the rays of the sun. . . . In other words, to understand the formation of a single tooth one must understand the physiology of the whole body; nay more, for a real understanding he must understand the universe as well."

The study of preventive measures in dentistry must be intimately associated with the work of restoration, otherwise the success of each undertaking will be doubtful. Dentistry must measure up to the new requirements, otherwise it will surely lose its entity as a profession.



“ It's All Right ”



FEW weeks ago I saw laid away the last surviving member of a former generation. His philosophy of life had been one of the most marvellous I have ever known. In all his ninety-four years he had never permitted the buffets of fate to interfere long with his serenity. He would receive a blow hard enough to knock most individuals prostrate, and the only apparent effect was to make him a bit more thoughtful for a time, and in the end he always wound up by saying, “Well, it’s all right.” This was the text of his every-day life—“It’s all right.”

How much better this is than to rail at fate, and to fuss and fume over every trifling reverse. He never wasted his energy or made his friends unhappy by constant complaining. He was the greatest optimist I have ever known, and there was never any situation in which he could not find some redeeming feature—never anything wrong which, in his estimation, might not have been worse. This faculty of being philosophical, taking life as it comes and making the best of it, is a real asset of happiness.

Then his life was one of those long and peaceful ones which are seldom vouchsafed to individuals in this mutable world. For the last sixty-eight years he had lived within a radius of a few miles, and for the last forty he had lived in the same house. That room of his downstairs off the dining-room was part and parcel of his very existence, and I shall never enter it again without feeling the hallowed presence of those who made its four walls to me a sacred shrine.

Living so long in one community he knew everybody, and everybody knew and loved him. I have never known a single individual to command the universal respect that he did, and it was always music in my ears to hear people speak of him. With all his lovable traits he had a very strong individuality, and his unique and characteristic sayings will be remembered for many a day.

His one ruling passion was a hatred of wrong, injustice, or cruelty, and the nearest I ever knew him to get into an altercation was when he stopped an overbearing neighbor from beating a child. He chanced to be walking along a country road, and saw this neighbor over in a field punishing a terrified and screaming boy. Calling the man by

name, he told him to stop. The neighbor looked up in a towering passion and said: "This is my child, and I guess I'll do what I like with him." Quick as a flash the answer was snapped back in a tone that could not be misunderstood: "If you strike that child another blow, I'll go over there and thrash you within an inch of your life!" And the neighbor knew only too well that every word of it was meant, and he dropped the gad and walked away muttering.

This was typical of his every-day life. He was always a defender of the weak, and he loved children passionately. Around his knee in later life grandchildren gathered to listen to the tales of other days, when life was more primitive and less complex—the days of the ox-team, the tallow candle, and the home-made flannel garments.

He saw brought into being the telephone, the electric light, the automobile, the phonograph, the radio, the flying machine, and a myriad other miracles which always fascinated him with their marvellous ingenuity. Life was never dull to him, and the world was always moving in the right direction. "What won't they do next?" was his enthusiastic and frequent comment.

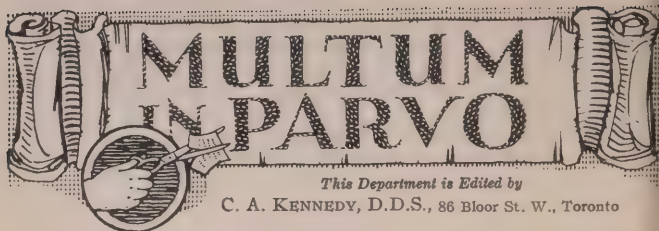
His life has always been to me a benefaction, and when the final summons came it was like a blessed benediction. To me the incentive has ever been to do as I thought he would wish. His commendation meant more to me than that of anyone else, and while I am sure I must have done many things that were not in accord with his ideas, I always found him a considerate and lenient judge. It was this, more than anything else, which made me always strive to do the things I was sure he would like.

Last summer, as I said good-bye to him, he was sitting out on the porch. He clung to me longer than usual, and for once his voice broke. "I'm sorry to see you go," he said, and then, catching himself and brightening up, he continued, "But you've done pretty well; you've stayed with us quite a while, and—it's all right." Those were the last words I heard from his lips.

And then, that Sabbath morning when the message came that he was gone, I found myself walking up and down the room, thinking of the wonderful life he had lived; and as I recalled the vigorous years of his activity, and the modulated and rounded years of his later life, and then thought of his peaceful old age and his final quick passing, the words spontaneously came to my lips, "It's all right."

But there was the same break in my voice that there was in his as he said good-bye on the porch.

C. H. Johnson



CAVITY PREPARATION.—Dentine when cut is much less painful than when scraped; therefore all instruments should be applied at such an angle that real cutting takes place. Too much stress cannot be laid upon this point.—*J. A. Woods.*

MATRIX FOR PORCELAIN INLAY.—No method of swaging the matrix on a model can, as a rule, give as good a fit and as sharp a margin as can be obtained by directly burnishing the foil to the cavity itself.—*J. B. Parfitt.*

DIFFERENTIAL DIAGNOSIS OF PULPITIS AND PERIODONTITIS.—A differential diagnosis of pulpitis and periodontitis is not, as a rule, difficult, if one goes into the question of pain caused by these diseases:

Pulpitis.

Pain acute, lancinating intermittent.
Tooth unaffected by tapping.
Tooth sensitive to heat or cold.
Tooth usually firm.

Periodontitis.

Pain dull, throbbing continuous.
Tooth tender when tapped.
Unaffected by heat or cold.
Tooth usually loose.

ETCHING INITIALS ON STEEL INSTRUMENTS.—Cover the article with a film of paraffin wax, and with a scribe write or mark whatever is required. Sprinkle some salt over this, and then cover with strong nitric acid. Clean off with hot water, and grease article to prevent rusting.

OBTAINING CORRECT OCCLUSION IN CAST GOLD INLAYS IN OCCLUSAL SURFACES.—Gold inlays in occlusal surfaces of teeth, even if care be taken in regard to articulation, generally require some trimming after cementation. A good method for avoiding this consists in placing a piece of 60-gauge tin foil between the wax pattern and the opposing tooth or teeth, and requesting the patient to bite. This method renders subsequent trimming or adjusting unnecessary.—*H. C. Moxham, Commonwealth Dental Review.*

Oral Health

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Vol. 16

TORONTO, FEBRUARY, 1926

No. 2

EDITORIAL

Incidence of Caries in Permanent Teeth

LSEWHERE in this issue are published the conclusions of the Report of the Committee of the Privy Council for the Investigation of Dental Disease.

The report states that taking both sexes together the incidence of caries is higher in the lower molars than in the upper, and higher in the upper incisors and premolars than in the lower. Regarding surface distribution of caries in the permanent molars, it is claimed that the occlusal surface is by far the most frequently attacked, and in the incisors the proximal surface.

The questions then naturally arise: (1) why is the occlusal surface of the lower molar more susceptible to caries than that of the upper? (2) why is the proximal surface of the upper incisor more susceptible than that of the lower?

ORAL HEALTH will be glad to receive for publication explanations of these phenomena.

In the meantime, we would submit an explanation in the single word "gravity." This is readily appreciated in the case of the lower molar fissure. The force of gravity is added to that of capillarity to bring about salivary stasis and plaque formation. This is not the case in the upper molar, where the force of capillarity must maintain salivary stasis in the fissure in spite of gravity.

The same principle applies in the so-called V-shaped interproximal space. In the upper teeth the apex of the triangle points downward with the force of gravity operating to tend toward stasis and plaque formation; while in the lower teeth the apex of the triangle points upward and the base downward. In the latter case gravity would tend to stimulate flow and prevent stasis.

These explanations may not be satisfying to many, and the Editor will be glad to receive other suggestions.

Education and Hygiene

 N essential part of any national health policy is the instruction in the principles and practice of hygiene of the great mass of the people. In this, as in other spheres of human affairs, ignorance is the chief curse. We are only now, as knowledge grows, becoming aware of the immeasurable part played by ignorance in the realm of disease. It is hardly too much to say that in proportion as knowledge spreads in a population, disease and incapacity declines, and this becomes more evident as the gross forms of world-wide disease are overcome. As in the individual, so in the community, knowledge is the sheet anchor of preventive medicine—knowledge of the way of health, knowledge of the causes and channels of disease, knowledge of remedy."—*Dr. George Newman.*

Obituary

MR. NORMAN CAMERON.



MR. NORMAN CAMERON passed away on Saturday, 13 February, 1926, at his home in Chicago, following a comparatively brief illness. The late Mr. Cameron is a brother of Mr. Will J. Cameron, President of Cameron's Surgical Specialty Company, and will be greatly missed by his many friends throughout the United States and Canada.

MRS. J. WRIGHT BEACH.



HE many Canadian friends of Dr. J. Wright Beach (Habec) of Buffalo, extend to him sincere sympathy in the loss of his wife. Mrs. Beach passed away very suddenly on 3rd February, 1926.

* * *

DR. WILLIAM E. WRAY.



N Thursday, 11th February, 1926, Dr. William Elthiston Wray died after a severe illness extending over the past six months. Dr. Wray was born in Waterville County in 1872. After graduation from the Kitchener High School he entered the Buffalo Dental College, from which he graduated in 1905. He practised Dentistry in Franklinville for the next five years, when he moved to Toronto and obtained the dental degree from the University of Toronto. Since that time he has been in practice in Toronto until his recent illness.

Dr. Wray was a member of Howard Park United Church, the University Masonic Lodge, High Park Club, Orange Order, Howard Park Bowling Club and Weston Golf Club.

Dr. Wray is survived by his widow and five children, four boys and a girl.

Correspondence

To the Editor, ORAL HEALTH:

Your correspondent W. W. W., on page 53 of your January issue, discusses in some detail the question of the cost of dental supplies. There are generally at least two sides to a question, and I hope I may be permitted to offer some comments to modify his conclusions.

It has been established by an independent expert examination that the dentist receives more value per dollar in dental than in any other merchandise he buys. The tubing illustration he gives looks at first glance to be a difficult one to meet, but one would hardly compare the finest quality high-pressure hose encased in vari-colored mohair with common (must be very common) garden hose at 8c per foot. And, one would have to make some provision for the time of a dentist seeking the warehouse of a rubber manufacturer to purchase five feet of hose for 40c on the "cash and carry" system and for purchasing the adhesive paste and for the time and labor of disconnecting and re-connecting the mounts,—

not by any means a simple task. It is also a question of individual taste as to whether common garden hose is suitable equipment to place in juxtaposition to colored covered hose and a highly nickel-plated and beautifully enamelled cuspidor in the operating room. Tubing cuspidors are practically obsolete, and, owing to the extremely limited demand, the tubings cannot be made here and, therefore, have to be imported. The duty and tax amounts to 41 $\frac{3}{4}$ %. The price quoted was the manufacturer's price, plus the duty and tax, with but a moderate profit to the dealer. A tubing without mounts at a cost of \$5.25 would have been very willingly brought forward in a few days on request by any dental depot.

With regard to the scrap transaction with a dental depot, it should be explained that not infrequently it happens that a dentist asks for immediate cash returns. The method generally followed in such cases is for the gold clerk to pick out the 22kt. and 24kt. clippings, allow them the standard price for same, and to estimate the value of the balance, generally consisting of old bridges, teeth, plaster, dust, etc. It must happen that sometimes, as in the case quoted, he slightly under-values, but the contrary just as frequently occurs. Presumably, your correspondent would not expect the dealer to do this work, accept the responsibility, call for the scrap, weigh, pack, mail, insure and return the proceeds without some remuneration. I feel that the recitation of the itinerant vendor episode should not have been used in connection with the criticism of the established dental dealers. It has always been a mystery how these gentry can get the entree into reputable offices and put over their gold-brick-scrap proposition.

The testimony of your correspondent to the honesty and integrity of the personnel of the dental dealers is pleasing to read and is well deserved. They are selected for those attributes and are confidently entrusted thousands of miles from executive control with many thousands of dollars of investment. They are not Dr. Jekyll's and Mr. Hyde's—their integrity is exhibited equally to their customers as to their employer.

It may not be too much to say that the profession should feel as proud of the Canadian dealers as we do of them. While we are commercial and not professional men, our lives and energies are equally devoted to progress and fair dealing and to service for the good of the cause, with as much altruism in our make-up as is to be found in any other section of the community.

Respectfully yours,

HENRY THOMPSON,
President, The Dental Company of Canada, Ltd.

THE mark of the man of the world is absence of pretension. He does not "make a speech," he takes a low business tone, avoids all brag, promises not at all, performs much. He calls his employment by its lowest name, and so takes from evil tongues the sharpest weapon.—*Emerson.*



J. MILTON JONES, D.D.S.
Vancouver, B.C.

DR. JONES is a graduate of the Faculty of Dentistry, University of Toronto, 1902. He practised in Hamilton until 1910, when he moved to Vancouver, and for several years has limited his practice to Endodontia and Radiodontia. Dr. Jones served for several years as President of the British Columbia Dental Council, and is a Past President of the Vancouver Dental Society.

ORAL HEALTH

*A JOURNAL THAT STANDS FOR THE OUNCE OF
PREVENTION AS WELL AS THE POUND OF CURE*



Vol. 16

TORONTO, MARCH, 1926

No. 3

The Arts and Sciences Involved in Dentistry*

J. MILTON JONES, D.D.S., VANCOUVER, B.C.

CIENCE may be defined as knowledge gained and verified by exact observation and correct thinking, methodically formulated and arranged in a rational system. Knowledge of a single fact not known as related to any other, or of many facts not having any mutual relations, does not reach the meaning of science. The knowledge of various phenomena in the chemical laboratory may be a heterogeneous medley of facts which gain value only when co-ordinated and arranged by the chemist. On the other hand, art is skill in applying knowledge to the accomplishment of a concrete purpose. Art always relates to something to be done, science to something to be known. Not only must art be distinguished from science, but art in the mechanical sense must be distinguished from art in the aesthetic sense. The former aims at utility, the latter at beauty. The mechanical arts are the province of the artisan, the aesthetic arts are the province of the artist. All the mechanical arts are governed by rules; the aesthetic arts, while they make use of rules, transcend all rules. No rule can be given for the production of a painting like "The Transfiguration," a statue like the "Apollo," or a poem like the "Iliad."

Dentistry is an art, the practice of which depends upon a knowledge of many sciences, e.g.: Anatomy, Chemistry, Physics, Physiology, Pathology and Bacteriology. The artistic side of dentistry has made rapid advancement in recent years, due to public demand for restorations which defy detection. The glittering glare of gold of a decade ago was not only part of the routine practice of the dentists practising

*Read before the Vancouver Dental Society, January 5, 1926.

at that time, but was even demanded by their patients. In fact, we have seen diamonds set in the labial surfaces of incisors, such an operation no doubt adding much to the coffers of the operator, even though it may have been revolting to his finer senses. The fact remains, however, that such work was placed in the mouths of their patients by men who to-day would scorn the very appearance of such a suggestion. They have become educated by art to the point where porcelain in all its combinations of shades is brought to bear on the particular case in hand in an effort at concealment. True art is to conceal art. The jacket crown is an outgrowth of this present day demand for the aesthetic. It may not in all cases be as durable as the so-called gold cap, but it satisfies the finer feelings of the patient. One patient remarked to the writer that she would rather be temporarily beautiful than permanently hideous.

Now let us reflect on what the various sciences have contributed to our profession. A knowledge of Anatomy is necessary in order to understand the vital processes which build up the dental organs in embryo and develop them to their completed state as units in a complicated masticatory apparatus. The anatomy of the lungs and heart must be known to properly understand the supply of pabulum for the nourishment of the teeth and the carrying off of the waste products; also in the study of that human method of alleviating pain by anaesthesia. In a more particular sense the science of Anatomy comes in to aid the dentist when he is endeavoring to reproduce nature in the restoration of lost cusps, sulci and contact points after the ravages of caries.

An exact knowledge of the science of Anatomy is essential, too, in the art of applying local anaesthetics so that they will produce the desired effect and yet do the minimum damage to the parts involved.

Note secondly the science of Chemistry. The dentist should know what occurs by way of reaction when he makes a mix of cement or of plaster. Every time he encounters a pulp undergoing degeneration, the only way he can intelligently apply treatment is by recognizing the chemistry of the various stages of pulp degeneration, whether it be the formation of a pulp stone or the putrefaction involved in the death and subsequent infection of the pulp. The treatment of putrescent pulps was, until recently, purely empirical. The scientific treatment of this condition involves a knowledge of the changes wrought in the splitting up of the complex bodies of the pulp by micro-organisms. Every practitioner knew that in the process of pulp decomposition some kinds of mephitic gases were evolved which, if confined, would produce severe disturbances, but just what the gases were and how the disturbances were brought about he was left to conjecture until the science

of Chemistry revealed that the main gases were ammonia and hydrogen sulphide. He then set himself the task of taking care of these products. Chemistry taught him that formaldehyde would unite with ammonia producing a solid urotropin, and with hydrogen sulphide to produce sulphur and a liquid, probably methyl alcohol. This treatment, then, was a rational one based on the principles of chemistry. The later clinical observations of irritation of the periapical tissues is another matter upon which we are not dwelling here.

Thirdly, let us reflect on what the dentist owes to the science of Physics. Until a short time ago, we prepared our local anaesthetic with water as the vehicle; many cases of sloughing and more cases of oedema and after pain were constantly developing until we began to recognize the law of osmosis. We then worked out a formula which avoided a hypertension on the one hand and a hypotension on the other, and resulted in the use of such a solution as would pass freely through the cell wall without disturbing the equilibrium of the cell. Physics has come to our aid in the manufacture and use of suitably shaped elevators for extracting. The principles of levers and wedges have been used to provide a technique resulting in diminished trauma. The whole field of prosthesis in dentistry has been modernized by the correlation of all the principles of force and their application to the arrangement of the cusps of artificial teeth. The department of orthodontia has been simplified by a study of mechanical laws laid down by the science of Physics. In the operative field, we have to thank this same science for the production of our modern amalgams. Some of the older dentists used to file up a silver coin and amalgamate it with mercury. This was placed in the cavity and allowed to set. The undue expansion would result either in a bulging of the margins or in a splitting of the tooth. Thanks to Dr. G. V. Black, a study was made of the physical laws of expansion and contraction, and creeping and alloying of various metals, with the result that to-day we have a material which, when properly used, has saved more teeth than all other fillings combined. To the science of Physics we owe our x-ray machines. Who can tell the benefits to the health of the race which have resulted from the knowledge we have gained by radiodontia? Electricity has brought to us also a much more reliable means of testing pulp vitality. The study of electric ions has resulted in a method by which we may pass medicaments into the tissues by the method of ionization. We need hardly mention the advantages we have received from the application of electricity to the smooth running of our engines and lathes, nor the convenience of being able to throw the light directly on the operative field by means of mouth lights and head lights. In fact, the benefits to dentistry from the application of the physical laws of electricity are more varied than we have time to dwell upon here.

In the field of Physiology, we have learned how to give the expectant mother such diet as will ensure the child a denture with sufficient calcium salt to withstand the ravages of caries.

From the science of Pathology, the dentist has learned to recognize mouth manifestations of serious diseases, as syphilis and cancer, and by this early recognition many lives have been saved.

So, too, the science of Bacteriology has been the means of placing the treatment of mouth diseases on a rational basis. Because of our ability to recognize Vincent's Spirochaete, we are able to apply the best treatment for its destruction, whereas many of these cases were formerly treated as an ordinary pyorrhea, depending on instrumentation for producing a cure. This only gave the bacteria a chance to do further destruction by opening up new avenues of approach to the blood stream.

We have made only a few references to the benefits dentistry has derived from the arts and sciences, but we hope they may cause you to reflect on your heritage of past achievement, and with this heritage at your command, stimulate you to add your own contribution to the sum total of dental knowledge and skill to be passed on to your successors.

Gold Crown Repair



SMALL hole or slit in a shell crown can be very easily and neatly repaired by the following method: Clean the crown in acids; adjust the parts to their correct relationship. Firmly engage it in a suitable pair of pliers that will not conduct away too much heat. Have handy several cylinders of gold foil and a pair of pliers to place them. Flux the part to be repaired and heat the work in the open flame to a dull red; while at this temperature the foil may be attached by simply bringing it in contact with the crown surface. As much foil may be applied as is deemed necessary for strength and contour, and when cooler may be burnished to form. Then flux again and flow a little solder of suitable carat over this foil. This will make a strong and neat repair.—*Pacific Dental Gazette*.

Yesterday is yours no longer;
To-morrow may never be yours;
To-day is yours, and in the living present
You may stretch forth to the things that are before.

—CANON FARRAR.

Dentistry for Indian Children

R. H. MURDOCK, D.D.S.

Staff Dentist, Manitoba Division of the Canadian Red Cross.



THE Red Cross in Manitoba recently had the opportunity of giving much needed help to the Indian children at Fisher River and Peguis Reserve in a remote district of the province. As these children have no one to care for their teeth, I was asked to pay them a visit arranged by the Manitoba Division of the Canadian Red Cross Society and the Department of Indian Affairs.

Accompanied by Mr. Stevens, a Methodist missionary, I took the train from Winnipeg northwards to Hodgson and then drove to Fisher River. From Hodgson to Fisher River is about thirty miles. This would not be far over ordinary roads, but the state of the roads was beyond description. On several occasions our horses went down and it was a struggle to get them out. This was before the very heavy rains which started on the Sunday after our arrival and continued almost steadily for about eight or nine days.

NINETY-ONE PER CENT WITH DEFECTIVE TEETH.

After examining all buildings close to the school I accepted Mr. Stevens' kind offer of the dispensary of the mission as an operating room in which we could attend to the children. On Tuesday, after checking over the school we found 91 per cent. with defective teeth—this giving us nearly 100 children under the ages of eighteen who required dental attention.

By Tuesday night the clinic had started. The children came very willingly, thanks to the co-operation of Mr. and Mrs. Long, the resident teachers at Fisher River.

Right here is a good place to give a slight description of the conditions under which the clinic was conducted. The mission and school are situated in a few acres of clearing which is higher than the surrounding country. Both the school and the mission are on the banks of the Fisher River, about four miles inland from the mouth of the River of Fisher Bay. The buildings are frame and the out-buildings log, and all are well equipped inside, so that both missionary and teacher have comfortable living quarters. The buildings extend as far up as Dallas and down to the lowlands along the Bay shore. It is indeed a pretty place in summer, and a fine place also for mosquitoes. Crossing the river in front of the school is a log footbridge used by the Indian children when going to and from their day school.

Unfortunately, directly the clinic started on Tuesday, down came the rain so that practically all the children had wet feet. This would have made them more inclined to have septic trouble after extractions. Indeed, in several cases I postponed treatment until another day when I thought it might be dry. Besides the children we had several adults wanting extractions, and as they had toothache I could not very well turn them down, in spite of the fact that our clinic was really a children's clinic. In the past Rev. Mr. Stevens has had to do a lot of extracting, because very often the roads are too bad for the doctor to get down, and when the doctor did happen to be there the chances were that the teeth did not ache, and so the patient did not show up. The Indians, like a lot of other people, do not believe in showing a tooth to a dentist unless it is aching.

During my stay in Fisher River it rained nearly every day. The river rose and on the fifth day of my visit the children's footbridge was impassable. The day before the bridge went the Indian Agent, Mr. McCuish, who was down to pay out treaty money, had a narrow escape from being drowned when his buggy upset in mid-river and he was thrown out in water nearly up to his shoulders, with a very rapid current. As Mr. McCuish has had paralysis he is unable to swim and had he been taken off his feet a rescue would have been very difficult indeed in such a strong current. As it was he lost his blankets and everything in the rig. The treaty money was being carried over the footbridge or it would have gone too.

Against all odds, rain and high water, I was more than kept busy during my stay in Fisher River. A test was made of the adult work to see what the cost of a plate would be. While in Fisher River I made up two plates for an Indian woman who had the extractions completed over a year ago. I figured the cost of material approximately five dollars a plate. Of course, this is not the most expensive, but is something that I think would do for the majority of treaty cases. For the children some two hundred fillings were completed and about the same number of extractions for children and adults. Some forty children received treatment and there are twice as many more to receive treatment at some future date if arrangements can be made.

I had intended to put a clinic on in Dallas on the way back, but owing to the impassable condition of the roads I did not see how the children of the white settlers could possibly hope to get to Dallas and I accordingly called it off.

After a good deal of delay I finally got an Indian to risk his team through the mud as far as the Halfway. Mr. McCuish had figured that we might take it up the river by boat, but I thought it unwise to do so. The equipment is insured for \$1,000 against fire, but not against water, and I felt it was too great a chance to take.

So on Tuesday evening at nine p.m., after a drive of nearly all day through pouring rain, my Indian teamster and I reached the Halfway, both soaked to the skin, but our equipment dry, as we had big tarpaulins over it.

On Wednesday I set up my equipment in Dr. Bird's office, the resident doctor at Halfway, and on Thursday we inspected the Peguis reserve schools. We found 95 per cent. of the children with defective teeth and several with external openings on their throats as a result of acute abscesses. I do not believe I have ever seen in all my work in out-lying districts so much suffering directly caused from dental sources as in these two reserves. In many cases Peguis was a duplication of Fisher River, only the rain had stopped and the roads were much better. Here, again we were overwhelmed with work and had to turn over a hundred away. Even with Dr. Bird and myself working till late in the evenings it was impossible to get anywhere nearly through in the month allowed for work among the Indian children. Here again I had a very worthy adult case—a half-breed veteran of the Soudan—but whom I was forced to turn down rather than turn away any more children. The old gentleman was very disappointed.

I wish to mention the case of a boy of fourteen who had been suffering with severe toothache for several years, but was afraid to have his tooth extracted. As a result he developed an acute alveolar abscess, the pus burrowing through and discharging in his throat. Dr. Bird and I gave him gas, extracted the roots and in three days he was well on the way to recovery. This is only one case out of five that we had during our stay. No wonder that tubercular trouble is developing at a rapid rate amongst children living in these reserves when they have such septic mouths. This poison is a sufficient load for the system to carry without the additional burden of influenza and T.B. following.

In conclusion I wish to thank Mr. and Mrs. McCuish for their kind hospitality at the Halfway House, Dr. Bird for his invaluable assistance, Rev. Mr. Stevens for his hospitality at Fisher River and all the teachers and missionaries for their kind assistance, because the results could never have been accomplished without co-operation between us all.



EVER allow your patients to dictate to you regarding x-rays. Before you start your work be sure you are building on solid foundation. You are blamed for failures, so why not protect yourself with x-rays, such records are of great value to you.—

Fred F. Schartz, D.D.S., in Dental Student.

Saskatchewan's Programme of Health Education in Schools

EXTRACTS FROM THE REPORT OF THE DIRECTOR OF SCHOOL HYGIENE.



THE work of the school nurses consists of health teaching in the schools, of efforts toward improvement in the hygiene of school surroundings, and of examination of children for signs of physical defects which appear to be causing either mental or physical retardation. This work was carried on continuously throughout the year. The interest shown by children, teachers and parents tends to make the work of the nurse most encouraging, and each year increases our vision as to what may yet be accomplished.

HEALTH INSPECTION OF RURAL SCHOOLS.

During the year an almost complete inspection of small town and village schools was made. A great many of these schools have been visited twice, many three, and some four times. A small number of rural schools remain at the end of the year which have had as yet no nurse inspection.

HEALTH EDUCATION IN NORMAL SCHOOLS.

Lectures in health education were given at each of the local Normal School centres during the months of December and January. Each student was examined, and reports of corrections were received at the end of the term.

HEALTH TEACHING IN THE SCHOOLS.

Much might be written of the character of the health teaching being given in the schools, a point that is of keen interest to us and on which we feel the success of our whole effort depends. Good health depends on healthful surroundings, on removal of existing physical defects, but most of all on the regular daily practice of the essential rules of health. *The knowledge of the "essential rules of health" does not come to a child naturally.* It must be taught, and it is a vital part of his education.

In her work in the schools the nurse judges the health teaching by the physical condition of the pupils. Clean, well-cared-for teeth in the majority of the children in a school indicate teaching which is actually producing results, while "care of the teeth" marked even daily on a timetable, but showing no results in the children, is of no value whatever. "Clean hands before food," as a safeguard from communicable disease,

may be taught, but if no facilities for washing are provided in the school the teaching is wasted effort.

THE SCHOOL AND THE HOME.

Some of the best teaching is being done in the schools of communities where home conditions are primitive, and therefore health teaching in the home is negligible. In such cases the teacher is performing a service of incalculable value not only to these children, but to the community as a whole. Good health teaching in the school is soon reflected in the home. In other cases the appearance of the children as to cleanliness, etc., suggests excellent home conditions, while the school fails to provide the barest necessities of health—a water supply, individual cups and towels, and proper toilet arrangements. Too often such equipment has been provided by the school board, but through indifference and neglect it is not used to any advantage. In such cases the school is not a help, but a handicap, to the home in health teaching. Fortunately, such cases are in the minority.

SCHOOL SANITATION.

School surroundings are rapidly improving in all parts of the province, and the regard paid by both teachers and school boards to the comfort and health of pupils is extremely gratifying.

TREATMENT OF REMEDIABLE DEFECTS.

Requests for reports of treatment given in cases of remediable physical defect were sent to 1,345 schools, to which 925, or almost 70 per cent., responded. This is the greatest number of replies we have yet been able to obtain, and it is interesting because of the fact that only 60 of these schools reported no correction whatever.

CO-OPERATION WITH OTHER ORGANIZATIONS.

Considerable work has been done in connection with supplying speakers for local and district meetings of Homemakers and Women Grain Growers' Associations. In several towns these organizations have secured treatment for a number of cases. Several have organized the hot noon lunch for the school, while others have provided playground equipment.

APPEARANCES MEAN MUCH.—“Appearance is not everything,” but it is a good deal. A ragged, unshaved man may not be a tramp, but he conveys that impression. The dentist's equipment should not advertise him to his disadvantage.

Baby's First Tooth

E. T. GUEST, D.D.S., TORONTO.



THE science and practice of Dentistry is supposed to concern itself with "all the problems and conditions of teeth and mouth, in health, and in disease." Indeed, the field of dental science is expanding so rapidly that even the above definition is scarcely sufficient to cover the present scope of our work. There is, however, one phase of our dental lifetime which is almost entirely neglected by the dental profession—the arrival of baby's first tooth.

Every young father will tell you that this event is one of the most important happenings of a lifetime. The medical doctor uses it as a peg, on which he hangs the responsibility for every symptom or trouble the child may develop during a period of many months. The mother will say that her whole life is upset during the time when baby is "teething." But the dentist is left undisturbed. It is true that he may be asked in an incidental sort of way some questions about baby's teeth, but his advice is seldom expressly sought, and his professional assistance is rarely wanted. If there are irregularities or disturbances in connection with teething, it is invariably the physician who is consulted.

However, it is equally true that we, as dentists, are also guilty of ignorance and neglect in connection with baby's first tooth. How much do we hear about it during our years at college? How much can we find regarding it, in our dental literature? How much definite scientific knowledge has the average dentist, of this important member? We study the embryology of the tooth, and we advise expectant mothers concerning the influence of pre-natal development on the erupted dentition, but we show very little interest in baby and his tooth troubles until the teeth are fully erupted and the mouth has become a workshop where we can place our fillings, and later, our restorations.

Baby's first tooth is normally a lower central incisor, although occasionally the upper is the first to erupt. The usual time of eruption is during the fifth, sixth or seventh month, but earlier and later variations are quite common. Sometimes the eruption of the first tooth occurs quietly and uneventfully (that is, until father finds out about it,) but frequently it is accompanied by a certain amount of pain and systemic disturbance to the child.

This question of systemic disturbance is a debatable one. It is customary to expect a certain amount of disturbance during dentition, and we are only too ready to blame every symptom or trouble on "teething," instead of looking for the real cause. Dentition should never be made an excuse for neglect on the part of mother, nurse or physician. We have

banished the old idea that every child must have the measles. We know that that is untrue. It is equally untrue that systemic disturbance must accompany dentition. Therefore, when baby shows symptoms of pain, restlessness or digestive trouble, we must not forget entirely, that cardinal principle of all rational therapy, "Remove the Cause."

Pain is frequently caused by the pressure of the erupting tooth on a resisting mucous membrane, and may be relieved by lancing the gum, to allow the eruption of the tooth.

Digestive disturbance may be the result of a general inflammation of the alimentary tract, but in many cases it is caused by an unclean mouth, and by the neglect referred to above.

Restlessness may be the result of either of the above conditions, but in every case, every other possible source of discomfort to the child should be eliminated.

Sometimes teeth are poorly calcified on eruption, and seem to decay rapidly. This condition is due to faulty diet, either of the mother during pregnancy and lactation, or of the child after weaning. The sticky, unclean condition so frequently observed in young mouths, is due to improper diet, usually an excess of carbohydrates and a lack of those foods which require mastication. It has been said that young children should not require the use of a tooth-brush.

In general it may be said that if proper hygienic living conditions are observed for both mother and child, there should be very little trouble with baby's first tooth. In most cases, systemic disturbances are the cause, rather than the effect of disturbances of dentition. As dentists, we should see to it that proper hygienic living conditions are observed, and we should assure worried parents that many apparent abnormalities are really quite normal.—*Hya Yaka*.

THE VALUE OF BROWN BREAD.—A correspondent to the *Daily Chronicle* writes: "Some people maintain that they cannot digest brown bread, but by brown bread they probably mean the wholemeal variety. The ideal bread for these people is of a light cream color. It contains the whole of the germ of the wheat and none of the inner husk. For growing children especially this kind is almost a necessity. It has been stated recently by a dentist that every child must, while cutting its teeth, have at least a small piece of definitely brown bread every day if its teeth are to be covered with a casing of really hard enamel. For in brown bread there is found silica, of which the enamel is formed. This silica is absolutely necessary for the production of enamel, and a certain quantity is desirable even for adults to keep their teeth in good condition."

Development of Dental Education*

Specialists in Oral Surgery Appeared in Egypt very Early, but Disappeared for Centuries. Surgeon Formerly an Artisan of Low Degree Although Physician Was a Man of Distinction. Dentistry Originally of "Destructive" Type Only; Replacement, Restoration, Treatment, and Correction Developed Slowly. Oldest Existing Dental School is in Cincinnati.

BY FREDERICK C. WAITE,
Professor of Histology and Embryology, Western Reserve University.



OUR present day conception is that dentistry has developed out of medicine. As we to-day commonly use the term medicine to include surgery this idea is correct, but we often neglect the historical fact that for a long period during the dark and middle ages physic and surgery were separate callings and the physician and the surgeon were distinct individuals.

This distinction was emphasized with the advent of Arabic civilization into Europe. Arabic medicine was a faint survival of Greek medicine, but much modified. In the Arabic conception to do anything with the hands was menial, and a task only for slaves or those of lower caste. The physician gave only advice and directed the employment of medicines. Pharmacy was much more prominent than surgery. The physician was a philosopher and relatively well educated, while the surgeon was a mere artisan.

SURGERY BECAME ASSOCIATED WITH CRAFTSMANSHIP.

So medicine came to be associated with the learned professions and later especially with the monks and then with the clergy. When medicine came to fall under the control of the monks and clergy it encountered the proscription of the drawing of blood by the clergy and thus surgery was automatically further divorced from physic. In medicine scholasticism was dominant and empiricism almost vanished, while surgery became associated with craftsmanship and was considered less dignified and on a distinctly lower plane.

In Egypt long before the Christian era surgery and physic were practised by different individuals and even the surgery of the different parts of the body was separated. Here first probably appeared the surgical specialist of the mouth—i.e., the dentist—but only in Egypt was such intense specialization shown. However, even in early Greek medicine the attitude toward the distinctness of the fields of the physician

*School Life, December, 1925.

and the surgeon is clearly shown in that phrase of the Hippocratean oath imposed upon all students of physic in early Grecian time in which the student swears "I will not cut a person who is suffering with a stone, but will leave this to be done by practitioners of this work." In that oath the practice of the physician is called an "art," but the practice of surgery only a "work."

DENTISTRY BEGAN IN SIXTEENTH CENTURY.

So in the Middle Ages developed the barber surgeons, and not until after a considerable lapse of time did surgery in the late fifteenth century begin to gain an equality with physic and lead to the condition where a single individual might reputably be both a physician and a surgeon. Probably Vesalius (1514-1564) with his newer anatomy and the consequent possibility of rational surgery marks the beginning of a return of dignity to surgery. This was further elaborated in the same century with Pare (1510-1590) whose achievements gave new impetus and dignity not only to surgery but to what we now call dentistry, which first attained that designation in the latter part of the sixteenth century. This period was marked by the first book on dentistry by Ryff (1548); but the first real treatise on dentistry was by Fouchard (1728). That work gave a real impetus to dentistry and was the cause of the development of dentistry in France more rapidly than elsewhere.

PLUCK OUT THE OFFENDING TOOTH.

Mediæval dentistry clearly lay in the field of surgery. Even the Renaissance did not materially change this relation. It was largely of the destructive type, and, if one may paraphrase a biblical aphorism, was based upon the theory that "if thy tooth offend thee, pluck it out." True there developed in early times some crude replacement dentistry but this was only occasional, the great part of dental practice being restricted to extraction with some analgesic measures which lay in the field of physic rather than of surgery.

This historical disparagement of surgery probably is a fundamental cause of the less consideration given to dentistry through the long time up to the present. Only with the development in recent decades of the curative phases of dentistry is the profession of dentistry beginning to gain an equal footing with medicine.

Dentistry may be divided into five fairly distinct fields: Destructive dentistry—i.e., extraction—which is certainly historically the oldest; replacement dentistry, consisting of the crude making of artificial teeth of wood or bone, and more recently of various chemical compounds or metals, first as single teeth, then as partial dentures, and only comparatively recently as full dentures, which were first made by Fouchard in the early eighteenth century; restorative dentistry, consisting in the repair

of individual teeth; curative dentistry, consisting in medicinal treatment of diseased teeth and their adjacent tissues; and finally corrective dentistry, the most recent of all, and now included in orthodontia.

The first three of these are so largely of a mechanical nature that they could be accomplished by one with little understanding of pathology, of the action of drugs, of growth processes or even of anatomy. Not until curative and corrective dentistry came to occupy some considerable part of the general field did there arise a necessity for the broader education of one who proposed to practise this profession, and the progress of dental education seems to have been guided by these relations.

EARLY PROFESSIONAL EDUCATION MAINLY PRECEPTORIAL.

In earliest colonial times the physicians were chiefly men educated in Great Britain and the majority of them were both clergyman and physician, having studied medicine with their theological course in British universities, but as succeeding generations followed there was comparatively little return of young men to Europe for professional study and but few recruits to the professions immigrated from Europe to the colonies. Hence professional education was almost entirely restricted to the apprentice or the preceptorial system, gradually but surely deteriorating until in the middle of the eighteenth century medical practice became so decadent that even the Indian medicine man was at times better.

The preceptorial system was nothing more than education through apprenticeship, a procedure that followed the usage in the various crafts and historically the initial method for barber surgeons. Such education depends for its achievement on the ability of the preceptor. As preceptors became less and less efficient, because of poorer and poorer education and training, so medical education approached a cataclysm.

FIRST MEDICAL COURSE IN PHILADELPHIA.

Not until 1765, nearly a century and half after the first considerable colonization in America, was the first institutional professional education inaugurated in Philadelphia in the establishment of medical courses in the College of Philadelphia, which was later merged into the University of Pennsylvania. Up to the close of the eighteenth century eight medical schools had been established, of which but four were destined to survive for long.

In the first 40 years of the nineteenth century there was rapid increase in the number of medical schools. Although these schools were mostly within the limits of the original colonies, yet the new western regions saw, before 1840, the rise of medical schools in Kentucky, in Ohio, in Louisiana and in Missouri.

In spite of this increase of schools most of the physicians received all or the major part of their education under the preceptorial system, many

attending in medical school but one four-month course and more not at all. The courses in the medical schools consisted mostly of lectures and were designed to supplement the preceptor. Nearly all clinical teaching was under the preceptor, usually far removed from medical school or hospital.

NO COURSES IN DENTISTRY BEFORE 1835.

In none of the schools were there any courses in dentistry previous to 1835. Only incidentally was any instruction in dentistry given in the schools and that was confined to extraction. Under the preceptorial system the apprentice received no clinical dental instruction except on extraction. Mechanical dentistry was not gained under professional auspices but under apprenticeship to an artisan.

Through the first two centuries from the first colonization dental practice was a mere incident of general medical practice. Specialization in medicine that appeared early in Egypt had disappeared completely for centuries and there was yet no sign of its revival. Neither medical nor surgical specialties had as yet been separated off from general medicine. Few books on special phases of medicine had as yet appeared.

ONLY HALF DOZEN DENTISTS BEFORE REVOLUTION.

Occasionally an individual because of special taste or manifest ability in some limited field of medicine or of surgery gave his major attention to practice in this line. In this way there appeared now and then in one of the four large cities of the country (Boston, New York, Philadelphia and Baltimore) an individual who devoted himself almost entirely to dentistry. Thus in the last decades of the eighteenth century there were perhaps a half dozen physicians in the United States who were devoting themselves so much to dentistry that they might be called dentists. In addition, there were some barber-surgeon dentists and a few laymen who through contact with surgeon dentists of the French troops during the Revolutionary War had acquired some proficiency in and taste for dentistry. These were doing not only extraction, but some replacement and restorative dentistry, and at the end of the eighteenth century full dentures retained by suction and air pressure supplanted the earlier type, which were retained in the mouth by springs. Most of the replacement dentistry of the eighteenth and early nineteenth centuries was not in the hands of physicians but of artisans of another type, usually jewelers and silversmiths, carvers of ivory or wood, and such adepts at finer mechanical processes.

These few men could not be said to create a dental profession, but they formed the nucleus from which by apprenticeship there arose an increasing number of men who were practising only dentistry. Thus the

origin of the dental profession in the United States was individualistic, not generic. These two trickling streams of early American dentistry came from two sources—one professional, the other artisan.

DENTISTRY WAS NOT CONSIDERED IMPORTANT.

In the early decades of the nineteenth century there appeared at times suggestions that the medical schools should give more attention to instruction in dentistry, but usually without result. In 1837-38 dental lectures were delivered in the School of Medicine of the University of Maryland and finally in 1839 a few physicians, primarily engaged in the practice of dentistry in Baltimore, proposed the establishment of a dental school. In 1840 they obtained a charter and asked to be made a department of the University of Maryland. This request was refused. Various reasons are alleged for this refusal, the usual statement being that the medical faculty did not consider dentistry of enough importance to establish a school in that subject. It would seem, however, that the conditions in medical circles in Baltimore where for more than a decade a fierce rivalry between two competing medical schools, culminating in the late thirties, had aligned nearly every physician in Baltimore on one side or the other, had something to do with this refusal. Of the men connected with the proposed dental school some had been partisans against the University of Maryland and the personal element seems to have been a possible and perhaps a major factor in this refusal.

INDEPENDENT PROPRIETARY SCHOOL WAS PIONEER.

At any rate the refusal occurred and the dental school in Baltimore started as an independent proprietary school, not only with no connection with the university, but in a measure its rival. If the opportunity for close affiliation and co-operation of medical and dental education under the ægis of a university had been seized at that time it is probable the progress of dental education in the United States would have been far different, since this initial school furnished not only the precedent but much of the personnel to the faculties of the new dental schools that followed. The resentment at the refusal of the Maryland medical faculty and the interests of the men on the Baltimore dental faculty at once led to a breach between medical and dental professions that was inherited by all their students and was carried into practice and into the new dental schools that were established, these in turn to hand it on to new generations of dentists.

DENTISTRY BECAME MORE MECHANICAL.

This breach soon brought the thesis that previous medical study was not necessary to training in dentistry and resulted in a diminishing number of dentists who were also graduates in medicine. Thus dentistry

lost the benefits it had earlier enjoyed and became more and more mechanical. The artisan trained type of dental education of earlier decades was supplanting the medically trained dentist. Advance in dentistry came to be almost entirely along mechanical lines. The profession and the schools each supported the other in this programme, and since schools were nearly all proprietary this programme gathered headway with each year.

The response to the establishment of the Baltimore College of Dental Surgery in 1840 seems to have been gradual since the establishment of dental schools was discouraged both by physicians and by that considerable group of practising dentists who chose not to lose their prestige as preceptors. Five years later, in 1845, in Cincinnati, was established the Ohio College of Dental Surgery, now the oldest existing dental school in the world. In 1852 a school was established in Philadelphia. In the sixties, six more schools arose: another in Philadelphia in 1863; one in New York in 1866; one in St. Louis in 1866; one in Boston in 1867; one in New Orleans in 1868; and another in Boston in 1868.

Of the nine schools established before 1870 all but one were independent and proprietary. Not until the establishment in 1867 of the Dental School of Harvard University was there any affiliation of a dental school with a medical school in an established institution of general education.

FIRST GRADUATES NOT MEDICAL MEN.

Thus all the graduates of dentistry in the first 29 years of institutional dental education in the United States were the products of independent proprietary schools, and in these schools the curriculum was based very largely upon the precept of acquisition of facility in the mechanical phase of dentistry. Dentistry was no longer practised largely by men educated in medicine and with special taste in one field of medicine, but chiefly by men trained not first in medicine as a basis, but trained only in one small corner of medicine. These men specialized in a small field without having any conception of the broad basis upon which this specialty rested. Their experience was that of the present-day specialist in medicine or dentistry that too early specialization leads to immediate success but as surely to ultimate failure. Thus the dental profession which in part was initially broadly trained, and added to this special training in dentistry, deteriorated to the special training alone with scarcely any educational basis either general or professional other than manual dexterity. What had started as a specialized profession became a craftsmanship. And the gap between medicine and dentistry became wider with each decade. Under such circumstances, of necessity, any advance must be along mechanical lines and the importance of the mechanical phase became paramount in the minds of the members of

the profession and was of course reflected in the schools which were out of contact with any general educational influence.

PHYSICIAN-DENTISTS BECAME STEADILY FEWER.

These men who graduated in the first 30 years of institutional dental education were the fathers of the profession, and the impress of their ideas and prejudices upon the ideals of the dental profession is indelible. True, some of these men graduated in medicine either before or after graduation in dentistry, but such individuals became fewer and fewer with each year.

Shortly before the Civil War there began to appear in some States statutory regulations of the practice of both medicine and dentistry. This was first established for dentistry in Alabama in 1841. Under this procedure practitioners were required to qualify by examination before State boards, but this examination was waived if the individual was a graduate of a professional school. This statutory control in the course of two decades after the Civil War came to be operative in nearly all the States east of the Mississippi in regard to medicine, but in regard to dentistry there was some delay and not until nearly the end of the century was there statutory control of dental practice in all States.

This waiver of qualifying examinations to professional school graduates furnished the incentive for an orgy of establishment of proprietary medical and dental schools in the last two decades of the nineteenth century.

NINETEEN SCHOOLS IN OPERATION IN 1884.

To the nine dental schools of 1870 had been added seven more by 1880, and in the first half of the next decade eight more schools arose, making 24 dental schools established by 1885, but happily some were short lived, so that in 1884 there was a total of 19 dental schools in operation. Between 1884 and 1902, 35 more schools were established, nearly all proprietary and some fraudulent.* The resulting flood of poorly trained graduates of the many schools with meagre equipment and low ideals aroused the older and better men in both the medical and dental professions to an effort at regulation within the professions

*Access to additional sources of information shows that the figures of this paragraph should be revised. In the decade of 1840-49 two schools were established. In the decade 1850-59 four schools were established of which three closed before the end of that decade. In the decade 1860-69 seven schools were established, giving ten schools in operation in 1870. In the decade 1870-79 seven schools were established and three were closed, giving fourteen schools at the end of that decade.

From 1880 to 1883 inclusive, eight schools were organized of which three had not yet begun to operate so that at the beginning of 1884 of the twenty-eight schools that had been organized nineteen were in operation.

From 1884 to 1901 inclusive, sixty-four schools were organized and thirty-five schools were closed, merged or reorganized under a new name so that in 1902, although ninety-two schools had been organized in a period of sixty-two years, there were but fifty-one in operation. F. C. W.

f their own professional preparation. Since most of these schools were proprietary the universities could do little, and anyway professional education 40 years ago was not of major interest in the universities.

There was coincident although not co-operative effort in both medical and dental national professional associations for improvement in professional educational conditions and for regulation and control of the respective professional schools. In the decades following the Civil War committees were appointed in both the American Medical Association and the National Dental Association to devise some remedy in the educational relations in their respective professions. These efforts resulted in the establishment in 1884 of the National Association of Dental Faculties followed in 1891 by the creation of the Association of American Medical Colleges.

Ontario Dental Association Annual Convention, May 17, 18, 19, 20th, 1926

HE list of essayists for the Annual Convention of the Ontario Dental Association contains the names of such outstanding dentists as Dr. W. N. G. Logan, President of the International Dental Congress and Dean of the Chicago College of Dental Surgery; Dr. Thos. B. McCrum, of the Deaner Institute; Dr. Abram Hoffman, the well-known Buffalo Orthodontist; and E. L. Hatten, M.D., of Chicago, who for many years has been associated with dental research activities.

Among the clinicians, the Association, with pardonable pride, presents the names of Dr. Francis Scott Weir, of New York City; Dr. Howard L. Jackson, of Detroit; Dr. Thos. B. McCrum, of Kansas City; Dr. Fred F. Molt, of Chicago, and Drs. Spence Clappison, A. E. Webster, Edwin H. Ante and Ernie Cummer, of the Faculty of Dentistry, University of Toronto.

The Department of Periodontology, headed by Dr. Harold Box, will give a practical clinic upon Prevention, Correcting Occlusion, Instrumentation and Self Treatment in Periodontitis, while the subject of "Amalgam" will be presented by the London Dental Society. A clinic on Prevention and Simple Appliances in Orthodontia" will be given by the Toronto Academy of Dentistry.

The Convention will be officially opened by the Hon. Dr. Forbes Rodfrey, Minister of Health for Ontario. Prominent speakers have been secured for the noon-day luncheons, and entertainment of a very pleasing nature has been arranged.

Present reports indicate that the attendance will be the largest in the history of the Association, and dentists from points outside Ontario will be cordially welcomed.

Dentistry in War 'Time

BAD TEETH AS DEADLY AS BULLETS—LOOKING A LONG WAY
AHEAD—SKILL: AND THE RESULT.

BY GEORGE CECIL.

A QUESTION OF NECESSITY.

IN the South African War almost as many men were incapacitated owing to defective teeth as owing to wounds, the British War Office having omitted to send out a corps of dental experts. Officers and men alike had to submit to the ministrations of the Royal Army Medical Corps, or to endure their aches and pains as best they could. Happily for the health and comfort of the English troops, during the late war the "advantages of the Army" included a number of skilled dentists, who served in every country in which fighting took place. Since those days, an Army Dental Corps has been formed, so that wherever officers and "other ranks" are stationed or fighting, they may depend upon having their mouths properly looked after. And high time, too! . . .

In the earlier stages of hostilities on the Franco-Belgian frontier, the question of soldiers' teeth did not interest the authorities. To entrain and embark regiments, batteries, ammunition, rations, and so forth from England, was all that mattered. But after a few frenzied months when Lord Kitchener's "three weeks or three years" had been forgotten and when the War Office realized that it was a case of "it may be for years and it may be for ever," Generals bestirred themselves. Members of the dental profession were invited to serve—even implored to do so.

THE NEXT WAR.

To a young man, scarcely out of his apprenticeship, and whose prospects of making a fortune were none too rosy, there was considerable inducement to accept the offer. The pay and allowance being fairly good, the youthful dentist could save money; and if he saw no actual fighting, the change of scene at least enabled him to rub shoulders with the world, to expand his ideas, and consequently to improve his mind.

The dental surgeon also enjoyed the distinction of ranking as a officer, his first commission being that of second-lieutenant, while he speedily rose to the rank of lieutenant, eventually becoming a captain. Here the aspirant for military honors stopped. Much as many would have liked to write the word "major" after their names, the War Office declined to humor them. They were allowed to wear a khaki field-service

jacket, breeches, gaiters and a Sam Browne belt, and advised to be satisfied. Recognizing the futility of kicking against the pricks, each officer-dentist bowed to the inevitable.

These extemporary officers, by the way, have been ordered to retain their uniform and equipment in case they are called upon to serve in the next war, each practitioner's name and address having been noted. Admirable forethought!

DISILLUSIONMENT.

Upon arriving at their destination, the officers of the newly-formed (the nucleus of the present and permanent) corps had to face disappointment. In the first place, temporary combatant officers resented their holding commissions. This decidedly was snobbish, as many of the dentists were as well-born as those who cold-shouldered them. But matters eventually adjusted themselves; the toughest and roughest amongst the detractors, and the most exclusive "regulars," eventually made themselves agreeable. (It was not safe to affront the man who might, in return, have touched up the nerve . . .)

The next disappointment was the distance between the dental-surgery and the firing-line. To a high-spirited man who yearned to see active service, it was galling to hear the guns booming thirty miles away, and never to view anything more exciting than the searchlights when night-attacks were in progress. However, in the next war the dental officer is more likely to be in the thick of things, for his operating tent will be pitched as near as possible to the advanced base, and even closer to the scene of activities. There will, of course, be no time for filling and crowning teeth; but urgent extractions are to have attention. Only at a remote base can patients make certain of receiving a thorough overhauling.

Towards the close of the last war much time was wasted in sending officers and men from the firing-line to a far-distant base for the simplest form of dental relief. In future the advanced base surgery will do away with this abuse.

ROUGH AND READY.

At the close of the late war the English papers published much nonsense about the (alleged) perfection of the military dental arrangements. As a matter of cold fact, they were far from being perfect. In 1914 everything could be forgiven; shortcomings earned a pardon. But the Lille and Rouen surgeries, as late as 1919, were not provided with any sort of anæsthetic; the unfortunate soldier was expected to have every tooth in his head extracted under the conditions which prevailed in the earliest days of army dentistry. It also may be noted that

during the first three years of hostilities the dentists were so few and so overworked, that countless teeth which might have been saved were sacrificed to time: crown and bridge work could not be thought of. Owing to the scarcity of relief-posts, sufferers had to walk from six to twelve miles, through the heavy mud, to be attended to a fortnight after applying for an appointment. And the mud on the Franco-Belgian frontier was the worst possible . . .

When things had settled down, almost every base was provided with a well-equipped dental establishment fitted with all the latest instruments and devices known to dental science and including an x-ray apparatus. The operators, too, were highly skilled, though it must be confessed that in the matter of extractions they were not always kind to the unhappy patient. The present scribe, for example, had occasion to present himself before a military dentist, an uncouth Scotchman. "Can I have an anæsthetic?" "Na, ye canna'. Oot comes yer tooth or oot ye gang." It would be interesting to know if this practitioner had a success in his post-war practice. One imagines that slaughtering cattle, or playing football, would be his proper occupation. Happily for the credit of the present corps, this undesirable type is unknown.

Upon manœuvres recently taking place in England, each army carried a field dental surgery, the officers in charge mostly occupying themselves with extractions. They did not, however, invariably use an anæsthetic. "If I give the patient a whiff of gas, or an injection, he promptly tells his friends 'that it came out without hurting.' So, as time's valuable, just tell him to hold on to the chair—and yank it out!" Not saying much for the "advantages of the army."

INTERESTING CASES.

In war time the day's routine is varied by hospital cases,—a bad facial wound, involving serious injury to the jaw, calling for the dentist's highest skill. In the late war many a dental officer rose to the occasion, changing the aspect of a disfigured mouth that one scarcely would have known of the patient's mishap. Cases of this kind invariably take precedence over the ordinary routine surgery, unless the sufferer is in great pain, or of high rank. Field Marshals do not care to be kept waiting, while even subalterns expect to receive preferential treatment. The private must await his turn.

The dental staff usually consists of two officers, two mechanics and an orderly, whose duty it is to usher in patients and to send away newcomers when the waiting-room becomes too full. One of these orderlies, an enormous and terribly ferocious-looking Irishman, has turned his spare time to account by studying the art of extraction. Patients, however, fight shy of him.

“See Canada First !”



THE Canadian Dental Meeting this year will be held in Halifax, August 16-19, and promises to be the best ever held. The programme is shaping up well, and a large crowd is looked for. An excursion is being planned to go down to the sea by rail and boat, and enjoy stop-over privileges at the most interesting and historical points. There will be a number who will wish to motor to Halifax, and for their benefit a tour has been mapped out whereby they may enjoy the beautiful landscapes and see the cities and towns by the way.

Touring from Toronto to Halifax on Government roads:

	Miles.
Toronto to Prescott	226.3
Prescott to Montreal	126.3 352.6
Montreal to Quebec	180 532.6
Quebec to Riviere Du Loup	121 653.6
Riviere Du Loup to Van Buren	104 757
Van Buren to Woodstock	85 842
Woodstock to Fredericton	65 907
Fredericton to St. John	68 975
St. John to Moncton	92 1,067
Moncton to Truro	131 1,198
Truro to Halifax	65 1,263

The Government roads through Ontario and Quebec along the beautiful St. Lawrence River through Montreal, Quebec, Point Levis and Riviere Du Loup are excellent, and the scenery beautiful.

The St. John River is the largest river in New Brunswick, and the scenic beauty unsurpassed, and to the lover of Nature it is a “Paradise.” The towns of Edmundston, Woodstock and Fredericton are all interesting, and situated among picturesque and wooded areas along the many streams which abound in the Province of New Brunswick. Through Nova Scotia there is always something of interest, and the drives through the Annapolis Valley and the Land of Evangeline will well repay all who go down by motor.

Dr. P. E. Doolittle, president of the Canadian Automobile Association, has expressed himself forcibly upon the numerous side-trips which may be taken from Halifax. The roads are very good, being of gravel-macadam, which give a very pleasant feeling while travelling at a fair speed. There will be found numerous small roadside inns and lodgings along the route, and if a resort for a week or more should be desired there are many to choose from. A journey through Prince Edward Island would be most profitable for those who have the time; a car ferry from Tormentine to Port Borden is only about forty minutes’ ride, and seldom rough.

The Island roads are good, and the country mostly pastoral and



Pastoral Scene, P.E.I.

very interesting. The deep-sea fishing industry is well developed, and those desiring a day's outing with the boat and net will find it to their liking. Any members of the profession desiring road maps may be supplied by writing to Dr. Bagnall.

The return trip may be made from St. John along the Atlantic coast and on through New Hampshire, Vermont, the White and Green Mountains skirting Lake Champlain, through the Adirondacks, and on to the Canadian border; or by way of Philadelphia to the International Meeting.

C. ANGUS KENNEDY,
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Choking Fits in Children



IN the epitome of current literature in the *British Medical Journal* reference is made to certain cases described by E. Lenstrup in *Acta Paediatrica*. Three cases are recorded of violent choking fits occurring in infants a few weeks old, caused by deficient development of the mandible, whereby the tongue could not be kept in its normal position, but fell back into the pharynx, blocking the opening of the larynx. Cleft palate was also present in all the cases, but did not appear to affect the clinical picture.

Treatment consisted in fixing the child in a lateral position by means of pillows, so that the tongue fell forward by its own weight.—*T. Dental Surgeon.*

A Consideration of the Factors Governing Successful Root-Canal Operations; Causes of Periapical Infection*

BY CARL J. GROVE, PH.G., D.D.S., F.A.C.D.,
ST. PAUL, MINNESOTA.

HE profession has, in my opinion, adopted a too radical attitude toward pulpless teeth in classing all as infectious. Periapical infection does not necessarily occur because the pulp is removed from a tooth. In fact, the mere absence of the conception is due largely to lack of proper understanding of the etiology of the infection. In fact, the mere absence of the conception is due largely to lack of properly understanding of the etiology of periapical infection.

The variance of opinion regarding the cause for these infections may be due, partly at least, to failure to take into consideration the fact that the character of the tissue in the extreme root end is not pulp tissue, as has been so generally believed.

To quote from an article published in July, 1916:¹

"What shall be done with these tissues when the pulp tissue is devitalized?

"The general supposition is that the pulp tissue passes through the apex into the periodontal membrane in fully developed teeth. *

"It should be remembered that the apical foramen of fully developed teeth is formed by the cementum. If the pulp tissue were present in this portion of the canal, dentin should be formed by the odontoblasts of the pulp tissue. I believe the fact that this does not occur clearly indicates the erroneous character of the theory that the pulp extends through the foramen."

This tissue which is periodontal membrane is placed in the root end of the canal for the purpose of making possible the prevention of periapical infections in pulp removal. Every effort should be made to preserve this tissue if successful root-canal operations are desired. In my opinion the cause for these infections is the destruction of the tissue, whether it be by the use of medicaments or by mechanical means, and by the removal of the pulp.

The present methods of root-canal operations are sufficiently faulty to produce infections in more than 75 per cent. of pulpless teeth. The practice of opening the root canals to the apex by the use of decalcify-

*Read before the American Dental Association, Dallas, Texas, and published in the Journal of the N.D.A.

¹ Grove, C. J.: Dent. Cosmos, July, 1916.

ing agents and the use of other irritating remedies in the root canal is responsible for much of the infection existing at the present time.

In the preservation of this tissue at least 75 per cent. of pulpless teeth will be free from infection directly reverse to the present situation.

We are often prone to regard the loss of a tooth too lightly, and the mere evidence that a tooth is pulpless is considered sufficient reason for extraction. The contributions to our literature favoring this practice have indeed been too frequent. It will only be through a general disapproval of this attitude, with a full realization of the evil effect resulting therefrom, that we can hope to cope with the situation.

To appreciate the importance of the retention of non-infected pulpless teeth, one must fully realize the value of their service as well as the harm resulting to the entire arch from the extraction of even a single tooth. The total disregard of the importance of all pulpless teeth by many recent graduates is appalling.

Because some investigators have discovered streptococci at the apex of a large percentage of pulpless teeth, the extraction of all pulpless teeth has become common practice. This teaching is based upon bacteriologic findings only. Whenever diagnosis is based upon one branch of science only, error is likely to creep in.

If the pulpless teeth that are extracted are sectioned and examined under the microscope, it will be found that evidence of infection is lacking in many. It should be remembered, then, wherever infection exists, bacteria are active; they are not merely lying dormant in the tissue. During the various stages of infection there is a continual process of tissue destruction. The result of such disturbance can always be recognized in sectioned tissue by means of the microscope. If no cell destruction is revealed and no histologic change from the normal investing tissue is present, infection does not exist. More positive proof that such teeth are not infected could not be offered.

I am not offering an argument for the retention of infected pulpless teeth. I believe all such teeth should be extracted. The point I wish to emphasize is that not all pulpless teeth are infected. Some maintain that whenever the pulp is removed the irritation thus produced causes the resistance of the periapical tissue to be lowered to such an extent that infection is induced. That infection will occur when undue irritation is produced in pulp canal surgery cannot be denied, but this can be avoided in all cases of pulp removal.

As I have frequently shown by photo-micrographs of sectioned root end tissue, the foramen is divergent with periodontal membrane folding into this divergent space. The apical portion of the pulp tissues unite with this membrane. The pulp does not extend through the foramen as has been taught, but ends a short distance from the opening. The narrowest part of the canal is at the point where the pulp unites with

the membrane. If a barbed broach is inserted to about this point, the pulp will invariably separate at its union to the membrane. Frequently an attempt is made to remove the tissue in the foramen, in the belief that this is pulp tissue. This will result in serious irritation, and frequently follow the destruction of this tissue. Experiments that I have conducted on dogs showed that infection invariably followed the destruction of this tissue.

It should be remembered that the foramen of all teeth in advanced age or middle life is made up of cementum, and not dentin. The fact that cementum forms the foramen makes it obvious that periodontal membrane once existed in this area, and that the membrane has been transformed into cementum. The tissue in this part of the root canals in teeth of youth is periodontal membrane. It is important that this fact be borne in mind when removing the pulps of such teeth.

The blood vessels extending into the pulp pass through the membrane. When all the vessels pass into the pulp from a position directly opposite the opening, only one canal is formed, but when the vessels pass through the foramen from different angles several canals are formed. In the process of obliteration of the membrane and the deposition of cementum, the blood vessels are not obliterated, but are left intact; cementum is laid down around the blood vessels, leaving an opening for each vessel; and thus we have multi-canals.

In the removal of the pulp, no concern need be felt regarding the issue in the multi-canals, for, as I have already stated, blood vessels occupy these canals. After the pulp is removed, these vessels are obliterated, having served their function. A deposit of cementum is laid down in the foramen of each canal. The periodontal membrane folds into the apical openings of these canals just as it does in the opening of the larger canals. An attempt to open these canals, by the use of chemical agents of any character, will result in the destruction of the membrane, followed by infection.

The most important factor in the success of this operation is absolute sepsis. All instruments, as well as all material introduced into the root canal, must be sterile.

There are, however, other matters of great importance, such as the avoidance of undue irritation to the tissue. Undue pressure must be avoided when the filling is placed in the root canal. The force ordinarily used in filling root canals, by the method now in vogue, is greater than required or is safe in this operation. Pressure will cause atrophy of these tissues, with infection following.

I wish especially to emphasize the danger of employing medicaments of any nature, in root canals, from which the pulp has been removed. It has become a habit with many dentists to use powerful disinfectant agents to assure sterilization of the root canal. If strict asepsis is ob-

served in the removal of the pulp, agents of this character are not required.

Immediate root filling should be done. Some may object to this because absolute dryness cannot always be obtained at this sitting. A slight exudate is of no serious consequence. I do not mean that canals should be filled when the flow of blood is perceptible, but when the cotton points show only a coloring of blood, I do not hesitate to fill the canal. Hemorrhage can invariably be controlled by packing the canals firmly for a few minutes with sterile cotton points.

There are, of course, always some exceptions to the rule of immediate root filling, but they are extremely few. In these cases, when a dressing is required, I would suggest that a mild antiseptic be used. The root filling material must be free from irritating as well as destructive properties.

I must emphasize the importance of removing all of the pulp tissue. Great care must be exercised to avoid undue injury to the tissue in the foramen. As I have already stated, the narrowest part of the pulp is at its union to the membrane. The pulp will naturally separate from the membrane at this place as it is the narrowest and weakest point. If, in this operation, only fragments of pulp tissue should remain, they may be changed to scar tissue, which has a very decided resistance to infection, Nature producing this change of tissue to prevent periapical infection. Investigations lead me to believe that this fibrous tissue remains as such throughout the life of the tooth. When all of the pulp tissue is removed, a transformation of the membrane in the foramen takes place, cementum forming to close the foramen, but I do not believe this ever occurs where pulp tissue is left.

Experiments conducted on dogs' teeth showed that when parts of pulp tissue were left, infection occurred in a high percentage of cases.

As stated, chemicals of any character should never be used for removing pulp tissue, for such agents will destroy the tissue in the foramen, periapical infection resulting.

Only teeth with vital tissue in the foramen are free from infection. I base this statement upon the fact that all the noninfected pulpless teeth that I have sectioned and examined microscopically have had either vital fibrous tissue or cementum in the foramen. Such teeth have not, of course, been filled to the very end of the root. It is upon these findings that I base the statement that a greater percentage of rarefied areas exist at the apex of roots that are termed "perfectly filled" than is found at the apex of roots that are fairly well filled.

CONCLUSION.

When no evidence of periapical infection is disclosed by a roentgenogram that shows clearly the details of the investing tissue, an electric

vitality test should be made. It would be found that all pulpless teeth having vital tissue in the foramen, either cementum or fibrous tissue, respond to this test. As I have already stated, teeth having vital tissue in the foramen have been found to be free from infection by microscopic examination. It is, therefore, my contention that all pulpless teeth responding to this test are free from periapical infection. It will also be found that infected teeth do not respond to this test. Roentgenographic findings can then be checked and it can thus be determined whether or not infection is present.

I employ a tester that allows both the negative and positive poles to be applied to the tooth under examination, which obviates isolating the tooth to be tested, as there is no radiation outside of the two platinum electrodes.

SUMMARY.

1. The tissue in the root end of the canal is periodontal membrane, not pulp tissue, and should be preserved. The membrane will be transformed into cementum, filling this part of the canal, or fibrous tissue will be formed, remaining as such throughout the life of the tooth.
2. The mere destruction and removal of the pulp tissue is never the cause of periapical infection.
3. The destruction of the membrane in the foramen, whether by chemical or mechanical means, is the cause of periapical infection.
4. Only teeth with vital tissue in the root end of the canals are free from infection and, in the presence of infection, this tissue will not remain vital.
5. Infection invariably follows when part of the pulp tissue is left.
6. Teeth responding to the electric vitality test are not infected, as infected teeth will not respond to this test.

Gum Incision Following Coronal Fracture



CASE presents itself of a broken tooth, the coronal part being fractured above the gingival margin, but still so firmly attached to the soft tissues as to require a local anæsthetic for its removal. If it is decided to retain the root for crowning, it is

good plan, whilst the tissues are anæsthetized for the removal of the broken crown, to take the opportunity of cutting the former freely back to a point above the line of fracture. This greatly facilitates the adaptation of the crown.—*British Dental Journal*.

The Root Canal Problem*

BY JOHN V. CONZETT, D.Sc., D.D.S., F.A.C.D.,
DUBUQUE, IOWA.



ENTISTS have for many years believed that there is a direct relation between infected or diseased teeth and systemic disease; in fact, that there is a vicious circle wherein diseased teeth cause systemic disturbances and systemic dyscrasias react on the teeth, and that they therefore make for continued pathologic reactions each on the other. It was not until the published observations of Dr. Hunter that there was a general recognition of this fact. This publication, coupled with the fact that the roentgenogram was then available and showed many rarefactions at the apices of pulpless teeth; that the researches of bacteriologists showed these rarefactions to be the results of infections and, further, that they identified the organisms isolated from these areas with the organisms responsible for many of the chronic and acute diseases attacking mankind, made it seem a demonstrated fact that areas of infection about the apices of teeth were responsible for many of the diseases with which the human family was suffering. Further, researches by authorities in the medical and dental profession added proof to the foregoing facts by the inoculation of animals with bacteria taken from the apices of teeth or from the pulp canals of persons suffering from systemic disease, the same disease being thus produced in the inoculated animal. Following these disclosures, there was a flood of clinical evidence in the writing of the two professions, detailing remarkable cures that had been accomplished by the elimination of infected teeth. So strong was this evidence, many men in both professions made the claim that it was almost criminal to allow a pulpless tooth to remain in a patient's mouth. The public press and popular magazines took up the tale, and soon the public was inoculated with the idea, and for awhile the dentist that had the temerity to advise the extirpation of a pulp was regarded as a therapeutic heretic. Nevertheless, there were some of the older men in the profession who refused to be swept off their feet by the new movement, for the reason that they had been practising for so many years, and had seen the results of their work in so many cases in which patients had retained good health, in spite of the presence of many pulpless teeth in their mouths; so they were satisfied that there was much exaggeration, to say the least, in the theory. Since the development of the theory of focal infection, we have seen the ruthless extraction of millions of teeth, good, bad and indifferent. We have seen many patients

*Read before the Odontographic Society, Chicago, Ill., April 14, 1925, and published by courtesy of the Journal of the American Dental Association.

remendously benefited by the operation and many more that have had to benefit whatever. We have also had the pleasure of seeing many patients benefited by the elimination of the infected areas through treatment of the teeth without extraction, so that to-day we are in a better position to reorient ourselves, study the problem afresh in the light of the evidence of the past and see whether we cannot arrive at a more satisfactory solution of the problem. We believe that the 100 per cent. vitality men, who honestly thought that every pulpless tooth should be extracted, are ready, for the most part, to reconsider their position, and to acknowledge that some pulpless teeth can be retained in the mouth without harm to the patient. On the other hand, we are fully persuaded that the men in the profession who felt that all or nearly all of the pulpless teeth could and should be saved are ready to surrender their position; for everyone must surely be convinced, at this time, that there is much truth in the theory of focal infection and that the teeth are a large factor in that problem. Let us not be influenced to too great an extent by clinical evidence, however, for it is possible to mobilize an army of cured patients to support any therapeutic agency, be it mechanical, medical or mental, or pure quackery. It is a fact that from 70 to 80 per cent. of all diseases are self-curable, and when the time comes that Nature is ready to effect a cure, when perhaps the patient has been the rounds of many doctors and suffered many things in the hands of many physicians and quacks, the man in whose care he is at that time will receive the credit of the cure, no matter what method or material he may have used. Then, we must not forget the tremendous power that lies in suggestion. It is one of the most powerful agencies for good or for evil in the world, and many of the cures that are effected by physicians and health cults of all kinds are really effected by the power of suggestion and the faith of the patient in the particular method used at the time. Time will not permit us to illustrate this, but numberless cases could be reported in substantiation thereof. Therefore, the fact that many cases have been reported as cured, or tremendously benefited, by the extraction of one or more teeth is not a demonstration of the truth of the theory of focal infection as it relates to the teeth. Were we to depend on clinical evidence alone, we could cite case after case that had not been benefited by extraction; other cases that had been cured by the treatment of the suspected teeth, and others in which the patient had been made worse by extraction. Therefore, it will not be wise to depend too much on mere clinical evidence. Furthermore, it is rather to be expected that many men rushed into print with cases of cures from extractions but were careful not to say anything about the failures they had had in the expected results in other cases. These facts, coupled with a very sincere belief in the value of the teeth to the human animal, have led me to study the subject of

diseased teeth with a view to their salvation and use to the patient, rather than to their heedless extraction.

We know that the organisms about an infected tooth are identical with those that cause many of the acute and chronic diseases, such as rheumatism, gastric ulcer, appendicitis, cholecystitis, endocarditis, myocarditis and iritis. But we also find these same organisms in infected tonsils, sinuses, gallbladders and genital organs, as well as a colon overflowing with them. We also know that we have systemic diseases of streptococcal origin in patients whose teeth are in perfect health or who have had no teeth for many years. We also know that teeth with vital pulps, but with cavities of great or small dimensions, have pulps that are infected with the same organisms, and we know that the pulp tissue is in intimate contact with the circulatory system and that there is little or no defence, in the pulp, against organisms contained therein gaining access to the general circulation.

We also know that dentures worn by patients have masses of bacteria on their surfaces in immediate contact with a mucous membrane that is far from normal by reason of the wearing of a denture for many years, and yet many of the vast majority of these patients are in perfect health. We also know that the physician is accustomed to see the sick individual; while, for the most part, the average dentist sees the healthy one. The dentist will see thousands of pulpless teeth in healthy patients, and will get the impression that there is little or no danger in an alveolar abscess, infected pulp canal or a pyorrheal pocket; while the physician, seeing but the sick and finding the evidence of infected teeth in the patient's mouth, is impressed with the idea that all infected teeth are a menace to the health. It is my belief that there is truth in both cases, and that eventually the dentist and the physician, working together, will be able to eliminate the teeth that are a menace to the individual, and save the ones that, being of no harm, will be of incalculable benefit to the patient. There should be greater harmony between the professions, and I believe there will be, when it can be demonstrated that the dentist is willing and able to co-operate intelligently with the physician in his efforts to restore the sick to a state of health. This is the prime motive in the presentation of this paper, and I wish to assert that I do not in any manner intend to reflect on the splendid profession of medicine, which has done more for the advancement of humanity than any other body of men or all of them taken together. Never was there a more self-sacrificing group than that composing the profession of medicine, and that they have condemned thousands of teeth that might have been saved was due to the absolute belief that in so doing they were benefiting their patients. If we of the dental profession will attack the problem in the same spirit of service to the public, forgetful of self, we will demonstrate our right to enter the lists in favor of the salvation of the teeth, which it is our duty to do.

If, then, there are teeth that are foci of infection and a menace to the patient and there are other infected teeth that are not a menace to the patient, and that can be saved, how can we differentiate the one from the other, and intelligently proceed in the salvation or the elimination of the teeth under discussion?

Sir Kenneth Goadby, in 1920, in discussing the subject of focal infection, said, in substance: "You have a great deal more trouble with focal infections in this country than we do in Europe. It is not a question of the seed but of the soil. The seed is everywhere. You cannot get rid of the organisms; they are in the mouth and on the surface of the body and are contained in most of the food you eat, but they are only pathologic to the individual because of a susceptibility to the organism, and that (pointing to the white bread on the table before him) is your principal offender."

Leaving out of the question the subject of dietetics, which the last remark naturally calls up, let us refer to the subject of immunity and susceptibility. If the organisms are everywhere and we cannot get rid of them; if, as Dr. Hartzell said in discussing Dr. Hall's paper in Chicago in January, there is no use in extracting a tooth that has an infinitely small number of streptococci, comparatively speaking, when the colon is a seething mass of streptococci that have the same power to produce the same diseases that the organisms taken from an infected tooth have, it seems that the only reason that any of us are alive is because we have become immune to the bacteria.

Unfortunately, immunity is not universal; neither is it permanent in the individual that is at sometimes immune. I think that we will all admit that there are persons who suffer from the effects of an infection of focal origin, and who, on the removal of that focus, recover. We will all also admit that there are individuals who carry about with them large areas that are foci of infection and yet are in perfect health. But suddenly there arises a something that lowers the resistance of the individual and sudden onset of some systemic disease is the result.

Price recognizes the immunity of certain individuals at times to the ravages of bacterial infection, and the susceptibility at others. He also believes that, owing to some overload, the immune individual may lose his immunity and become a victim of the organisms that he is harboring in some focus. He believes that the person who develops a well marked granuloma has reacted favorably toward the infection, the system having erected a barrier against the bacteria that will be effective as long as it persists. Other investigators, notably Grieves,¹ Rickert and Lyons,² have demonstrated the fact that many of the so-called granulomas are

¹ Grieves, C. J.: *J. Dent. Res.*, 2: 327 (Sept.) 1920.

² Rickert, U. G., and Lyons, C. J.: Report of Research Committee 9: 10 (April) 1922.

sterile, so it is evident that, in many cases, the immune individual overcomes the attack of the micro-organic invasion. If we were able to recognize the cases in which this power of resistance was present, we would be far on the way toward the solution of the difficulty. Unfortunately, we cannot do so with exactness or without failure. The roentgenogram is a help, but it is only a diagnostic aid; and while it should be used in all cases, it should not be relied on to the exclusion of other diagnostic aids. For this reason, we should disparage the diagnosis of professional roentgenographers who make a diagnosis with no other authority than a roentgenogram and, with perhaps no dental education, will condemn teeth by the thousands to the forceps.

That the inclination of modern research workers and pathologists of known ability is in the direction of doubting the all disease producing powers of teeth with areas of translucency about them is evidenced by the illuminating remarks of Dr. Hatton³ before the American Dental Association at Dallas, when he said:

"In the hundreds of periapical infections in which I have made examination histologically and anatomically, I have not found that the condition is in reality an abscess, except when there is drainage, either into a pulp canal or elsewhere through sinuses. In all of the infections in which there is no measurable, no noteworthy drainage there is no abscess and no pus. It is wrong, therefore, to say that the apices of such teeth are soaked in pus, because there is no pus there to soak them. On this account, I have used the phrase periapical infection to include all of these conditions, those with pus and those without. Without entering into an extended discussion of the I cannot let the statement (that the teeth and jaws stand first among the principal locations of primary foci) pass unchallenged. In an illuminating tabulation of the sources of bacteria recovered from the blood by culture methods, in not one instance were the teeth and jaws involved. I do not wish to question the seriousness of mouth infections; yet mouth infection is so common that it is hard to find individuals with infection elsewhere in the body that do not have some evidence of mouth infection. Now, why should these, in every case or in the majority of cases, be labeled primary and other foci secondary? Isn't it a possibility (and I believe it is in many cases) that the mouth infection is not primary but secondary to infection elsewhere in the body?"

Many of our writers and research workers in the past have insisted that an infected root canal could not be sterilized, but researches conducted by others of more recent date, with an improved technique, have demonstrated the falsity of that position. Indeed, Lyons and Ricketts state that the sterilization of the pulp canal is easy and certain when carried out under a careful technique. This is corroborated by Marshall, Blainey and others.

³ Hatton, E. H.: Disc. Buckley, J. P.: Bone—In Relation to Treatment of Pulpless Teeth, J.A.D.A., 12: 309 (March) 1925.

If, then, it is true that there are many infected teeth that are a menace to the system, and that there are undoubted cases of systemic infection and disease following dental foci; and, on the other hand, if it is true that the infection in and about many of these teeth can be eliminated and the teeth restored to health and usefulness, how can we determine which teeth to save and which to extract? In my practice, I have attempted to find a solution to this problem and, in doing so, have evolved the following classification and treatment of the teeth under the various classes, which has been so satisfactory to me that I am glad to give it to the profession, not with the thought that I am giving anything original or specific, for, while we have a large majority of successes, we have a sufficient number of failures to prevent our superiority complex from attaining too large dimensions. And, while the ideal is the perfect filling of the root canal according to the technique advised, we have too many illustrations of failure to fill the canals perfectly to allow us to bring to you a selected number of perfect root canal fillings as depicted in our roentgenograms. On the other hand, we find that the well-treated root canal will remain in a state of health and efficiency in the large majority of cases even if the canal is not perfectly filled to the apex.

CLASSIFICATION OF CASES.⁴

The classification is as follows:

- I. Normal teeth with healthy pulps.
- II. Infected pulps, but no exposure from caries.
- III. Infected and exposed pulps, with pulpitis.
- IV. Putrescent pulps, no apical involvement.
- V. Acute alveolar abscess.
- VI. Apical involvement, small well defined area.
- VII. Apical involvement with large diffuse area or necrotic apices.

It is rarely necessary to fill the root canal of a normal, healthy tooth, or to do so would presuppose the wilful destruction of the pulp, which is rarely good practice. In this day of abutments for vital teeth, one can hardly conceive a case in which the destruction of a healthy pulp could be justifiable, and yet the occasion might arise, and if it did, the filling of the root canal should be attended with 100 per cent. success. In such a case, the pulp may be destroyed with the aid of pressure anesthesia or by infiltration or block anesthesia. Never, in such a case, could arsenic be used, for no irritant should be allowed to enter the pulp chamber. This class should contain the ones in which we should expect the cementum to seal the apical foramen. The researches of

⁴ This classification was given before the Southern California Dental Association, June 18, 1923.

Grove⁵ and Davis lead us to expect that healthy apical tissue will cause a deposition of cementum around the apex of the tooth in cases in which there is no infection and in which the apical tissues have not been destroyed or atrophied by strong medicaments. Grove's work goes a long way toward reassuring the earnest practitioner that Nature, properly assisted by the dentist, will physiologically seal^o over the apical foramen with cementum, and make the tooth safe for all time. The work of Davis, in which he advises the amputation of the pulp at about the apical third of the root, is open to many objections, and cannot be accepted without much more evidence than he has as yet produced. I do not think his conclusions sound, and I should not advise any man to go very deeply into the practice until further research by competent men corroborate his findings. The work of Grove is sound, and the student of the subject is advised to read his publications.

The filling of a root canal demands a technique that is as aseptic as that of a laparotomy, and the dentist must be as careful of his asepsis as is a surgeon, as the success or failure of a root canal operation hangs on careful and conscientious observation of all the rules of asepsis. Before the tooth is opened, the rubber dam should be placed in position and the isolated teeth and dam should be thoroughly washed with alcohol, dried with the air syringe, again washed and again dried, after which the field is washed with a solution of iodine or solution of formaldehyde U. S. P. in five per cent. dilution. The tooth is then opened with a sterile bur, and, in the case of a tooth infected with caries, the bur should be frequently sterilized by dipping into the molten liquid contained in a Flaherty sterilizer. Instruments should be dipped into the molten liquid every time they are taken out of the tooth and before they again enter the canal. In this way, an asepsis as nearly perfect as possible is always maintained. When the pulp chamber is open, if it is a sterile case, the canals are opened under aseptic conditions, but if it is an infected case, when they are opened, some antiseptic is employed, the pulp chamber and canals being continually flooded with the solution.

In Class I cases, immediate root filling is advised, care being taken not to overfill the canals. In these cases, it is better not to fill to the end of the roots, that Nature may be given an opportunity to close the apical foramen physiologically with cementum. We know that the apical portion of the pulp does not contain odontoblasts or there would be dentin to the end of the apex. On the contrary, we know that the end of the pulp canal is in cementum and, therefore, cementoblasts are functioning at and within the apex of the root.

The ideal filling in this class would end about 1 mm. from the apex. For the same reason that the removal of the pulp tissue must be without

^o Grove, C. J.: Method of Pulp Removal to Prevent Apical Infection. J.A.D.A., 10: 93 (Feb.), 1923.

traumatism to the end of the root, the pulp at the extreme apex should not be removed but allowed to function in the closing of the foramen. The pulp chamber should be sealed with a good cement and the crown permanently filled as soon as possible.

Class II. Infected pulps but with no exposure from caries. In this class are those teeth that have been filled and that afterwards develop symptoms of infection; those that are slightly affected with pyorrhea, but not hopelessly so, and the pulps of which are infected via the vessels of the periodontal membrane or lymphatics; and those that are infected as a result of traumatism.

If the infection has developed only to the hyperemic condition, but the prognosis is bad, it is better to remove the pulp before it dies and becomes putrescent, and thus infects the dentin. In these cases, removal should never be made with the aid of pressure anæsthesia, for the pulp being infected, the pressure made on the medicament would be liable to force some of the pathogenic organisms through the apical foramen, setting up an apical infection. Infiltration or block anæsthesia is the ideal in this class, and great care must be exercised not to force any of the infected material through the apical foramen. The pulp removal should be carried out with surgical solution of chlorinated soda, the pulp chamber being flooded at all times during the operation. We do not fill this class at the time of the removal of the pulp, preferring to make several treatments at daily intervals with the surgical solution, to clear up any infection that may remain in the pulp chamber. After several treatments, the root filling is made. The canals are flooded with alcohol and dried, and again flooded and dried, to remove all possible moisture within the canals, and, after this treatment, the canal is filled with the alcohol, so that we have alcohol in it instead of water. Water will not mix with the filling solution; whereas, alcohol will. Therefore, if there is a little remaining alcoholic solution in the canal or in the tubules, it will not only not prevent the ingress of the solvent used for the gutta-percha, but will invite its presence by uniting with it, thereby facilitating the filling of the canals and tubules with the filling material. This method was suggested by Hinman and Johnson.⁶

The canals are now flooded with a solution made by taking 10 parts of iodine crystals, 10 of thymol crystals, 5 of white resin and 100 of benzene. Benzene is used because it is a solvent of all of the medicaments used in the solution and of the gutta-percha as well. The iodine crystals deposited within the tubules of the dentin effectually prevent any further activity of organisms that may have escaped the bactericidal

⁶ Hinman, T. P.: Interpretation of X-Ray Pictures of Apical Granulations, Giving Differential Diagnosis of Cases Favorable and Cases Unfavorable for Treatment and Root Canal Filling, J.N.D.A., 8: 83 (Feb.), 1921. Johnson, H. B.: Possibilities of the Callahan Method, J.N.D.A., 8: 87 (Feb.) 1921.

action of the antiseptics used in the treatment of the canals, as the means of egress from the tubules is blocked by an antiseptic that inhibits their activity. The thymol acts with the iodine, and also has a beneficent effect on the infected tissue. The resin, sterilized by the iodine and thymol, assists in effectually closing the mouths of the tubules, making any organisms contained therein absolutely innocuous.

This solution is pumped into the canals and is then followed by the filling, which it immediately takes into solution. This is pumped into the canals until a rather thick solution is obtained, when a long thin cone of gutta-percha is introduced, and pumped into the canal, followed by other cones, until no more gutta-percha can be forced into the canal. The benzene is absorbed from time to time with sterile cotton, and more gutta-percha is introduced, until a dry hard root filling is made. This gives us a maximum of ease of insertion, and surety of thorough filling and of maintained sterility.

In this class, there is also an attempt not to overfill, for it is hoped that the slight infection of the pulp has been overcome by the mild, but continued antiseptics, and that Nature will function in the closing of the canals.

We do not have much confidence in the closure of the apical foramen by the deposition of cementum in the cases in which there is much infection; for, on the one hand, Nature will not function in the presence of infection, and, on the other, any means that will sterilize the dentin after it has become thoroughly infected will be so strong that it will prevent the functioning of the cementoblasts. Therefore, in all other classes of pulp canal fillings, the attempt is made to fill the canals in their entirety.

Class III. Teeth that have pulps that are infected and show evidence of a pulpitis with an exposure due to caries. In this class, we do not remove the pulp either by pressure or block anæsthesia. We still use arsenic, because we feel that it is unwise to enter these root canals until their contents have been sterilized, and it is not possible to sterilize them while the pulp is vital and aching. Neither is it possible to sterilize them by any means known to us; therefore, the arsenical paste is used in devitalizing the pulp. After devitalization, we introduce a small pledge of cotton saturated with formo-cresol, which is sealed in for one day after which it is removed, and a dressing of eugenol sealed in for a day or two. The canals are then opened under strict asepsis and the contents of the canals cleaned out with pulp canal cleansers. In this class the canal is always flooded with the surgical solution of chlorinated soda and the contents are carefully removed. The orifices of the canals are first sought out with fine smooth broaches, which are carefully carried to the ends of the root, the solution being pumped ahead of them, if possible. If the roots are constricted and there is difficulty in cleansing them, we use a 50 per cent. solution of sulphuric acid, and if that does

not effectually open the root canal, we dry out the acid and try to gain an entrance with a saturated solution of potassium or sodium hydroxid. The acid assists in removing the inorganic portions of the root, but sometimes there are portions of the pulp or organic material that prevent the effectual opening of the canals; when the alkali is indicated instead of the acid. Rhein and others advise the use of the potassium sodium paste, and while this is doubtless effectual, we find that the use of the sodium potassium hydroxid is equally effective and not so dangerous.

It is needless to say that great care must be exercised in the use of any of these powerful agents, for, if any of them penetrate the apical foramen, there will be a decided apical pericementitis, causing great discomfort. After the canals are thoroughly cleansed, they are neutralized with the appropriate solution and dried as thoroughly as possible.

These are infected canals and must be treated as such. The removal of the infected pulp by means of the acid or alkaline solution will sterilize the superficial layers of dentin in the root canals, but the probabilities are that the deeper layers are still infected, and while, in the great majority of cases, the organisms contained within the tubules will not escape and do any damage if the root canals are filled, it is better to destroy them if possible, and here the method introduced by Dr. Percy R. Howe⁷ is of the greatest advantage. The canals are flooded with ammoniacal solution of silver nitrate, and, with a smooth broach, the air is liberated, allowing the solution to penetrate the roots to their extreme ends. After remaining in the canals for two or three minutes, solution of formaldehyde U.S.P. in a five per cent. dilution is introduced and allowed to infiltrate the silver nitrate solution. This causes a reduction of the silver, which is thrown down as metallic silver, and the orifices of the tubules are sealed therewith. More than this, if there is any albumin present, the silver solution enters into chemical union with it and creates the antiseptic albuminate of silver, which permanently closes the tubules with an antiseptic plug. Silver nitrate in itself is one of our most potent antiseptics, and any organism coming in contact with it will be effectually destroyed and then infiltrated with the silver nitrate train.

The application of silver nitrate solution is repeated twice, with the solution of formaldehyde reducing agent, and the canal is again flooded with the silver solution. This time, the silver is reduced with eugenol, which is placed in the canal, and the patient is dismissed until a future sitting.

At the next sitting, the canals are cleaned out and flooded with alcohol, this process being repeatedly followed by flooding and drying until several applications of alcohol followed by drying have been made. The

⁷ Howe, P. R.: *Dent. Cosmos*, 59: 891 (Sept.) 1917.

canals are then flooded with iodine-benzene solution, and the filling is made as before stated.

Class IV. Cases presenting with putrescent pulps, either with or without exposure of the pulp. We will frequently find cases of putrescent pulps under fillings in which there is no exposure, and also in cases of traumatism and of the death of pulps from infection caused by pyorrhea or traumatic occlusion. In any case, the rubber dam is to be placed as in any other case of root canal treatment, and entrance carefully made into the pulp chamber. As there has not been any apical involvement, great care must be observed not to cause any of the infectious material to be forced through the apical foramen. This is the place pre-eminently for the formocresol treatment. I am aware of the contention that has arisen over the use of solution of formaldehyde in the treatment of root canals, and have carefully followed the work of Grove and Dahlgren; but the results that have been obtained in the practice of treating root canals that contain putrescent pulps, with the formocresol, over a period of nearly twenty years, with no bad results and an abundance of successes, make me seriously doubt the laboratory methods that would discredit such a clinical experience, especially when any other method that has been tried has not given the desired results. Roentgenographic examinations of canals that have been filled for ten, fifteen or twenty years and that were treated with the formocresol solution disclose the fact that the apical portions of the roots are in good condition, equal to that of roots treated by any other method. The solution cannot be indiscriminately used, of course, for it is a potent agent, but properly used in putrescent and infected cases, it is the best agent for the controlling of infection that I have ever used, and I shall continue its use in a rational manner until some agent as good or better is found.

The formocresol is placed upon a pledget of cotton, which is placed in the pulp chamber and sealed in with a good cement. In twenty-four hours the dressing is removed, and part of the contents of the canal is removed. If there is a remaining putrescent odour, a small dressing of formocresol is again introduced for twenty-four hours; then the dam is placed, and the contents of the canal carefully removed with sulphuric acid as an antiseptic. Dr. Finn, of Pittsburg University, who enters these canals at the first sitting and cleanses them with sulphuric acid and then places a dressing, has been uniformly successful, but the great danger of forcing some of the septic contents of the putrescent canal through the apical foramen, and thereby causing an acute alveolar abscess to develop, as has happened too many times with the method used in the past, has always deterred me from following the method successful though it has been in the hands of Dr. Finn and his pupils. After the canals have been cleansed, if in a tooth distal to the bicuspid

the Howe silver reduction method is used and the filling made as in the case of canals in Class III.

If the tooth is one anterior to the first bicuspid, the canals are flooded with surgical solution of chlorinated soda and a dressing of dichloromine-T is made. This is repeated every day for three or four days, when the filling is made as above described.

I have been asked whether I make the filling in the anterior teeth with the iodine solution. In the indicated cases I always do, and I have yet to find a case of discoloration caused thereby.

Class V. Acute alveolar abscess. These being pus cases, drainage must be established as soon as possible. It is wise to establish drainage through the canal if this can be successfully accomplished. Many times the canals can be opened and the foramen penetrated, and the patient by suction can eliminate a considerable amount of blood and pus. If this can be done, relief is speedy and almost sure. The canal is washed out and a dressing of formocresol placed therein and left for twenty-four hours. In most cases there will be an abatement of symptoms, and the rest of the treatment will depend on the symptoms developed. If there is swelling and evidence of pointing, the elimination of the pus through a sinus artificially established should be effected as soon as possible.

With the sterilization of the root canals, the apical symptoms usually rapidly disappear, and the canals can then be filled in the manner indicated above.

Class VI. Cases presenting a small area of apical translucency, which we have been taught to call granulomatous, whether they are or not. They are evidently Nature's response to a call for assistance, and there is a walling off of areas of infection, just as in the walling off of infected tissue in other parts of the body. We have been taught that all of these areas are infected, and that they are the cause of all sorts and conditions of diseases. The work of more recent bacteriologists, with an improved technique, has proved that the error lies with the men who assert that all apical areas are infected. The work of Grieves, Rickert, Lyons and Howe and their associates proves that many of these cases are sterile, and it is suspected that some of those in which infection is found may be the result of contamination. We do not wish to convey the impression that there are no diseased teeth that are causing systemic infections—far from that—for we firmly believe that there are many cases of diseased teeth that are the real cause of systemic involvement. The point that we are striving to stress is that not all infected teeth are causing systemic disease, and that clinical evidence should be suspected and largely discounted in the consideration of the subject.

In the treatment of cases of blind abscesses that have a small area

of translucency we confidently expect to have a large percentage of cures, basing our judgment upon the experience of the past. The tooth is opened under aseptic precautions, and a small dressing of formocresol is placed therein and left for twenty-four hours. The tooth is then opened under the rubber dam, and the contents of the canal are cleaned out, sulphuric acid being employed as an aid. The technique of removing the contents of the canal is carefully followed, great care being taken not to force any of the material beyond the apex. Gentleness is the order of procedure, and if the canal cannot be opened with a gentle instrumentation, it is closed with a dressing of surgical solution of chlorinated soda and left for the next day. This dressing is replaced every day for several days, an effort being made each time to penetrate farther into the canal. After several days' treatment the dam is again applied, and an effort is made to get to the apex of the root. If possible, and success demands that it be done, the apex is perforated and the surgical solution is pumped into the abscess sac. In this way the sac is drained if there is anything in it, and if not, Nature is stimulated to absorb the sac; for the results of such treatments show that the translucent areas fill in in the large majority of cases, and the tooth remains in a healthy state of functional activity.

After the penetration of the apex and the treatment with surgical solution of chlorinated soda, the root is treated by the Howe reduction method and filled as any other root would be that had been the seat of infection; that is, with the iodine benzene compound.

Class VII. Teeth with large translucent areas, into which the apices of the roots are seen projecting; those with necrotic apices, as evidenced by the ragged shadows of the root apices, and particularly those with a large, diffused area of translucency, indicative of the fact that there is no attempt by Nature to confine the infectious process by walling off the seat of infection with a granuloma, or, if there had been, the effort has failed, and there is no barrier between the infected root end and the tissues of the body. Conservation of these teeth is hopeless, and they should be extracted as soon as possible.

The last class is the really serious one from a systemic standpoint, and such teeth should never be tolerated in the mouth. Many in this class are teeth that have been treated and have been in the mouth for years. The roots have been filled in a septic manner, and when the tooth is opened the contents of the canals are extremely offensive and highly infectious.

This classification and the appended treatment of the various groups is not offered as the ultimate. Indeed, we recognize the fact that many of the areas about the apices are infected, and that the hosts are susceptible to the toxins of the contained organisms. If it were possible to settle definitely the matter as to which areas are infected and which

sterile, and to differentiate definitely between the patients that are susceptible to the specific organism creating the infection, and those that are not, our task would be much simplified. In our practice it is the rule to attempt to save all teeth having small areas of infection, if the general condition of the patient permits, and to this end the age, general health and apparent immunity or susceptibility of the patient is taken under consideration. We say the apparent immunity or susceptibility of the patient, for there is no definite way of knowing how a patient will react. The health of the patient, however, is paramount, and if, in the opinion of the physician and the dentist, the teeth should come out, there should be no question about the matter. It is hoped that the time will come when we will be able to say definitely which teeth must be sacrificed and which may be saved, and, with this thought in mind, the foregoing is offered in the hope that the discussion created will stimulate more thought, effort and study, to the end that not so many teeth will be needlessly sacrificed in the future. It is needless to say that the ideal is a 100 per cent. denture of vital pulps in sound teeth, and to this end prophylaxis should be practised, taught and preached with all of the enthusiasm of our natures.

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DR. ARTHUR B. CRANE.

IN the quest for a solution to the problem of the pulpless tooth there has been some tendency to assume that the tooth and its supporting structures are subject to erratic influences entirely unconformable to normal biologic laws. While the tooth is a highly specialized organ, its health is dependent on natural processes and reactions common to all tissue.

The justification of any therapeutic agency is its compatability with normal tissue conditions and inherent tissue reactions. Root canal treatment can be successful only when this qualification is observed.

There are certain features of the normal anatomy of the tooth and its supporting structures on the existence of which the feasibility of root canal work depends.

Of prime importance is the histologic character of the dentocemental junction. A microscopic study of this area will disclose an extremely thin band of homogeneous dentin completely surrounding the periphery of the radicular dentin. Adjacent to this inorganic layer of dentin, and in such close contact with it as to make differentiation difficult, is a similar band of amorphous material lining the cementum. The effect of this double layer of solid material is to wall off or insulate the dentin, so that the passage of bacteria is absolutely impossible except through the apical foramina or abnormal communications.

While the dentin is devoid of regenerative capacity, the cementum is a constantly growing tissue. The embedded fibres of the pericementum are often cut off from areas of the cementum by physiologic absorption due to the normal stress of occlusion. When this occurs, a new layer of cementum is formed, embedding other fibres of the pericementum. This reparative process is the function of the cementoblasts which lie between the fibres of the pericementum. As long as the vitality of these cells is unimpaired there will be a spontaneous formation of cementum in response to natural requirements.

The normal extremity of a root canal consists of a crater-like or funnel-shaped depression in the apical cementum. Grove has demonstrated that this depression is filled by a dipping in of the fibres of the pericementum. If this tissue remains vital, even though the pulp is destroyed, this part of the canal may be closed, through the normal activity of the cementoblasts, in such a manner as completely to shut off the canal from communication with the vital tissues. Thus Nature is capable of the completion of the inorganic barrier, which constitutes an efficient defence against infection from the substance of the dentin or the pulp channels.

In speaking of root canal fillings, Dr. Crane said that Dr. Callaghan once showed a tooth which was filled just to the end—no more and no less. He said it was the only one he was sure was filled just to the end, and the reason he was sure of this was because he put his thumb over the end while he was filling it. How much work have you gentlemen done in your laboratories on extracted teeth? If you will take a number of extracted teeth and prepare the root canals as carefully as you know how, without penetrating through the apical foramen, and then fill the canals and cut them open to see how nearly you have filled them, you will often be surprised. If you can fill one just right, it will be more than most men have ever been able to do.

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DR. THOMAS L. GILMER, CHICAGO.



WE have known for a number of years that infected pulpless teeth are in some instances harmful to the physical well-being of mankind. Hunter, of England, made a stir when he told us of the dangers from oral infection and cited certain phases of American dental practice as among its most prolific causes. Soon afterwards Billings and others definitely fixed the relationship between oral infections and certain diseases. It has long been known that some acute infections, whether of the jaws or of some other region, caused an albuminuria and other secondary manifestations. A study of the bacteriology of both acute and chronic infections was undertaken,

with the discovery that, in acute abscesses about the apices of the teeth, the prevailing organism was the hemolytic streptococcus, and that the prevailing germ of chronic apical infection was *Streptococcus viridans*; also, that in certain infections in the third molar region which took on the characteristics of a cellulitis, there were detected the streptococcus and *Bacillus fusiformis*, which seemed to be growing in symbiosis. Rosenow's extensive research revealed that, in certain heart lesions, the streptococci were the cause of the disease, and he was able, by inoculation, to produce similar diseases in animals. Two groups of dentists now arrayed themselves in opposition to each other. One was the ultra-conservative group, which did not accept the theory that apical infections caused secondary diseases; the other, the radical group, which contended that all pulpless teeth were a menace to the health of man. A third group accepted the statement that apical infections were a cause of secondary disease, but did not accept the declaration of the second group that, because a tooth is pulpless, it must of necessity be a menace to health. I have always found myself in accord with the third group. I believe I have been a conscientious student of the subject, and I have had good and wise aid in this study. Physicians have referred many patients to me to determine the condition of the teeth and jaws. I have learned from these physicians the nature of the ailments of the patients and recorded this information, noting on diagrams the condition of the mouth, teeth and jaws as indicated by radiograms and ocular examination. I have several thousand of these histories. It has been my good fortune to have been able to follow up many of these patients and to observe their condition at various times subsequently. In some instances, when chronic jaw infection has been discovered there has been marked improvement in the patient's condition after eradication of the infection. In some instances radical cures have followed; in others, none at all. When there has been radical improvement it is reasonable to suppose that the jaw infection was the principal cause of the secondary disease. In other instances, in which there has been improvement, but not a complete cure after removal of jaw infection, I have concluded that there were, in such cases, foci in other parts of the body which had been overlooked, and that, by eliminating the jaw infections, the patient's load had been lessened, with resulting improvement in his condition. In those cases in which no improvement followed the removal of jaw infection it is reasonable to suppose that there were other more formidable foci of infection which were the cause of the patient's secondary disease, and that possibly the jaw infection resulted secondarily from the other infection. Dr. Hatton will probably tell you that, as a result of his research, he has found in some instances old apical infections which were sterile, and others so walled-in that no escape of bacteria would be likely. This probably accounts in part for the good physical

condition of those patients whose radiograms show translucence about teeth with no secondary manifestations. My experience leads me to believe that too much attention is being focussed on infections about teeth, which are more easily detected, omitting observation of infections of the sinuses, the nasal fossae, the genito-urinary tract, the gall bladder and other parts of the anatomy. Many persons who have had gonorrhea still harbor the gonococcus, which may cause joint affections years after the initial attack. This is likewise true of nose, sinus, appendical and other past acute infections. Much more genuine scientific investigation is needed in solving some of the perplexing questions connected with focal infections.

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DR. EDWARD H. HATTON.



E have been making some experiments recently on pulpless teeth with granulomas taken from people apparently in good health. We have not been able to demonstrate the presence of bacteria by cultural methods in these granulomas and the associated pulp canals in 10 to 30 per cent. of the cases. We have also found that only about half of these lesions yield organisms that are virulent enough to produce gross changes in experimental rabbits. Remember, these are cultures taken from granulomas at the apices of teeth and from the associated pulp canals removed from people apparently in good health. We have not been dealing with sick individuals. From the histologic point of view I want to show one slide and make one suggestion as to the mechanism of the production of these regenerations at the apex. This is a longitudinal section of a root that has been treated and filled with gutta percha; the termination of the filling is about 3mm. short of the apex. The space between this termination and the apex is completely occupied by a rather fibrous pulp devoid of infiltration; that is, there is no evidence of infection, and a rather thick fibrous layer fits snugly against the gutta percha surface. The wall of the unfilled apical portion of this canal contains a record of a rather stormy reaction, following the placing of this filling, for there is a pear-shaped region from which the dentin was absorbed at the time of this reaction. But this denuded dentinal wall has been covered by a rather thick, relatively impervious, layer of what I choose to call osteoid cementum from the level of the gutta percha to the apex, and this layer is continuous with the external cementum. This reaction is not only characteristic; I have found it invariably in all the teeth that, from histologic evidence, may be said to have been successfully treated. Others in this country and abroad have demonstrated this condition. From the histologic point of view only those teeth can be successfully treated

and filled about whose apices this reaction can be produced. It must be clear that such a reaction cannot occur unless there is present at the apex enough intact peridental membrane or pulp to grow into the space immediately adjacent to the filling. It is obvious from this that regeneration of this tissue is hampered or completely nullified if the periapical tissues have been previously replaced by granulation tissue (denuded, necrotic cementum), and if these remnants have been hopelessly damaged mechanically or chemically. I should like to suggest that regeneration of the region at the apex after treatment and filling will not occur in individuals who, because of age, disease, or the state of nutrition, cannot produce new deposits of osteoid tissue. Aside from a complete calcification of this space between the termination of the gutta percha and the apex, I can conceive of no more cunning solution to this problem of the reconstruction of the apex than what I have described, viz., absorption of the damaged dentin and soft tissues, replacement of the absorbed dentin by a thick impervious osteoid cementum, and reduction of the diameter of the apical pulp canal. It is plain that if the dentinal tubules are completely closed in this manner, if a fibrous band covers the termination of the gutta percha, and if the gutta percha cone adequately fills the canal, reinfection from the interior of the tooth cannot and does not take place. It is this situation that has convinced me that over-filling is a pernicious practice, and that the filling need not be carried in every case actually to the junction of the cementum and dentin at the apex, provided only that the canal is adequately and completely filled up to the termination of the filling.

The Surgeon and the Instrument Maker

CCORDING to a newspaper report before us, a famous surgeon recently said that surgeons did not appreciate sufficiently how much they owed to the instrument makers for any success which they obtained, and that he himself realized that he could never have done what little he had done without their aid.

This is an interesting expression of good-will and recognition of a fact which does not perhaps always receive acknowledgment. The growth of modern surgery has brought with it a constant desire for improved and more varied instruments, and the extension of the benefits of modern surgery to a larger populace has created a demand for these instruments in larger quantities, both of which conditions have been amply met by the surgical instrument makers.

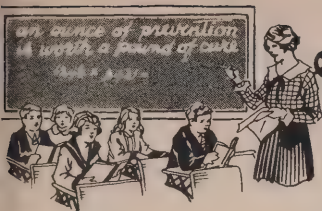
It seems to us that a similar state of affairs exists in dentistry, with the qualification that there is, perhaps, less public recognition of the

dental instrument and appliance makers than in the case of surgery. And yet one has only to read the early accounts of the first recognizable dental practitioners to realize how much more favorably situated are their brethren of to-day. In the early days, when a dental practitioner wished for an instrument, he had to fashion it himself. If his need was for one or other of the articles which are usually classed as "materials," they, in turn, had to be produced in his own workshop. True, it may be said that in this way he was to some extent master of the situation, but obviously he was sadly handicapped by the fact that his own small needs did not permit the work being carried out on an organized basis, and there was considerable waste of professional skill through the time absorbed in this work.

The growth of dentistry from the days of the early pioneers to the present day has, as is the case in surgery, brought with it a development of technique, and this in the greater extent of its application has brought about a demand for better and larger supplies. As a consequence of this professional activity, there has been simultaneously a similar growth in the dental industry. Throughout the past the efforts of the dental industry have been devoted to one end—that suitable supplies, in sufficient quantity and in keeping with operative technique, should be available at call for the use of the dental profession, with the result that the practitioner of to-day is called on to devote no time whatever to the fashioning of his own instruments or materials, but is free to devote the whole of his professional time and activity to the truly professional side of his calling. The development of dentistry has called for the investment of considerable capital, the creation of numerous laboratories for technical and manufacturing research work, and the development of large factories for the economic production of standard dental supplies. Naturally, the industry could not exist in its present-day highly organized condition were there not the demand for its products. Equally, if the dental industry had not grown up with this development as it has, the present-day dentist would be little better off than his predecessors.

If sometimes in the everyday routine a little consideration could be given to this condition of interdependence, we might more often hear that meed of praise for the *dental* instrument maker, which would imply recognition of the efforts to date for the dental profession of the organizations which he typifies and which make possible that greatest of aids to the modern dentist—adequate dental supplies.—*Editorial in Oral Topics.*

Wise sayings often fall on barren ground; but a kind word is never thrown away—*Arthur Helps.*



School Dentistry

This Department is Edited by

EDMUND A. GRANT, D.D.S.

*Director of Dental Services—Department of
Public Health, City Hall, Toronto.*



We are anxious to receive for publication in this Department reports of work carried on in School Dental Centres anywhere in Canada. Papers on any phase of Pedodontia would also be welcome.—E.A.G.



Annual Report of Dental Service, Department of Public Health, Toronto, 1925

CHARLES J. HASTINGS, M.D., *Medical Officer of Health.*

EDMUND A. GRANT, D.D.S., *Director of Dental Service.*

THE Dental Service in the Toronto schools is one of the many health activities conducted by the Department of Public Health. The staff consists of a director and thirty dental officers, four of whom are on full-time duty and the remainder on half-time. The service aims to make a dental examination of every child during the school year, and to instruct them on the care of the teeth and the importance of mouth health. As a result of the report sent to the parents many children are treated by the family dentist, and, in addition, the Department conducts twenty-eight clinics in the schools.

The dental survey in the Public Schools is made by three dental officers, who devote all their time to this work; while in the Separate Schools the examination is made by the regular staff of four dental officers, who suspend their clinic work for a period of a month or six weeks until this is completed.

The attached report shows in detail the results of the survey, in which a total number of 84,183 children were examined, of whom 55,602, or 66 per cent., were found to have defective teeth. As the percentage of those having defective teeth does not appear to decrease, an effort has been made since September 1st to secure further information from the examination, in order to determine whether the condition of children's

mouths has been improved as a result of the work that has been carried on for the past fifteen years. Since that date a tabulation has been made of the number of cavities, both in deciduous and permanent teeth, the number of unclean mouths, and also the more serious cases of oral sepsis, where the mouth is in such a neglected, broken-down and unhealthy condition as to constitute a serious menace to the child's health and progress in school. Comparing this with conditions in 1910, before the service was started, when 97 per cent. had defective teeth, with an average of seven cavities, and 50 per cent. of these in an extreme septic condition, we find that the present conditions reveal a very great improvement.

- 40,378 children examined since Sept. 1st had a total of 52,260 cavities in deciduous teeth, or an average of 1.25 cavities per child.
- 36,613 cavities in permanent teeth, or an average of .90 cavities per child.
- 891 cases of unclean mouth were reported, or about $\frac{1}{2}$ of 1 per cent.
- 509 cases of oral sepsis were reported, or about $\frac{1}{4}$ of 1 per cent.

These figures show very conclusively the very great improvement of mouth conditions in Toronto school children to-day over those obtaining before the service was started in 1910.

It is interesting to note that 1,167 cases of irregular teeth were reported in this group. It is hoped that in the near future some preventive work may be done in this connection.

DENTAL SURVEY.

2,186 classroom talks were given during the year by the survey dental officers. To some of these mothers are invited, and the talks are made interesting and instructive through the use of charts, lantern slides and films. This work is most valuable from a preventive standpoint, and it is hoped to extend it during 1926.

SUMMARY OF WORK IN CLINICS.

Nineteen operative clinics in Public Schools (there are also two clinics of one month each in Victoria Park and High Park Forest Schools).

Extractions of deciduous teeth	14,573
Extractions of permanent teeth (6-year molars)	448
Local anesthetics	6,008
Amalgam fillings	33,421
Cement fillings	11,562
Prophylaxis treatments	6,391
Temporary fillings	4,454
Arsenic devitalizations	503

Root treatments	3,366
Root fillings	615
Other treatments, relieving pain, silver nitrate, opening abscess, etc.	14,394
Number of patients treated	36,313
Number of patients completed	22,105

FOUR EXTRACTION CENTRES IN PUBLIC SCHOOLS.

Extractions of deciduous teeth	12,860
Extractions of permanent teeth	2,481
Local anæsthetics	4,894
General anæsthetics	1,867
Number of patients treated	5,697

FIVE CLINICS IN SEPARATE SCHOOLS.

Extractions of deciduous teeth	3,968
Extractions of permanent teeth	452
Local anæsthetics	1,530
Amalgam fillings	5,622
Cement fillings	2,230
Temporary fillings	193
Prophylaxis treatments	1,195
Arsenic devitalizations	62
Root treatments	132
Root fillings	75
Other treatments, relieving pain, silver nitrate, opening abscess, etc.	322
Number of patients treated	4,828
Number of patients completed	2,811

GRAND TOTAL OF WORK IN BOTH PUBLIC AND SEPARATE SCHOOLS.

Extractions of deciduous teeth	31,401
Extractions of permanent teeth	3,381
Local anæsthetics	12,432
General anæsthetics	1,867
Amalgam fillings	39,043
Cement fillings	13,792
Temporary fillings	4,647
Prophylaxis treatments	7,586
Arsenic devitalizations	565
Root treatments	3,498
Root fillings	690
Other treatments	14,716
Total number of operations	133,618

Total number of patients treated	46,838
Total number of patients completed	24,916

BRIEF SUMMARY.

Number of children examined	84,183
Number of children with defective teeth	55,602
Number of children treated in school clinics	46,838
Number completed in school clinics	24,916
Number of operations performed	133,618

Dr. Russell Atkinson, one of the most valued members of the staff, signed during the year, and Dr. R. E. Brayley was appointed to fill the vacancy.

COST OF THE SERVICE.

The total disbursements for the year were as follows:

Salaries paid to 31 dental officers	\$38,953.02
Salaries paid to 30 dental assistants	14,140.80
Supplies and equipment	4,221.25
Sundry expenses—transportation, telephone, postage, laundry, etc.	1,099.88
Total	\$58,414.95

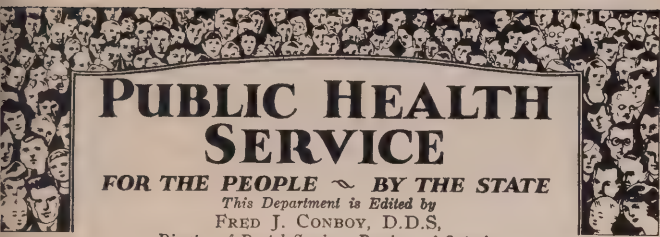
The total cost of \$58,414.95, compared with the school population of 89,985 children, gives an average cost for the school dental service of 65c per child. Or, comparing this total cost with the work done, viz.: 84,183 children examined and 133,618 operations performed, the average cost is 10c for the examination and 37c for each operation.

Cement Destroyed by Alteration in Water Content



F a bottle of cement liquid is left exposed to the atmosphere, one of two things can happen: it may lose or may absorb water. Under average conditions, the liquid would be more apt to lose water than absorb it. The first effect of this change in the liquid is to upset the balance. Silicate cements are more sensitive to alteration in water content than the zinc oxyphosphates. Evaporation of water from a liquid will cause the cement to become slower setting. For instance, the liquid used in Experiment 1 originally set in less than three minutes, but at the completion of the experiment, that is, after 69 days' exposure, of the uncapped bottle, the liquid lost 24.59 per cent. of water and required two hours to set. Needless to say, this liquid could not be used in practice, as all dental cement liquids change by exposure.

From time to time, certain dental cement manufacturers have deliberately or ignorantly advertised their cement liquid as being unaffected by exposure. In most cases, this was intended to enhance the sale of their products by creating the impression that the liquid of other manufacturers, who conscientiously cautioned the user against leaving such liquid exposed, was sensitive, while theirs was unaffected by exposure. The facts in the case are that all dental cement liquids will alter their composition if exposed to the atmosphere. The laws of nature cannot be changed to suit the wily advertiser. If a cement is balanced by the manufacturer, this balance can only be preserved by keeping the liquid properly stoppered at all times. A good piece of advice to those who expect excellent cement operation is to keep the liquids properly stoppered at all times, and in as cool a place as possible. If this simple advice is followed, a higher standard in dental operations involving the use of cement will result.—*Register*.



PUBLIC HEALTH SERVICE

FOR THE PEOPLE ~ BY THE STATE

This Department is Edited by
FRED J. CONBOY, D.D.S.,

Director of Dental Services, Province of Ontario.



A Health Carnival



HE Young Women's Christian Association of Hamilton recently held a very successful Health Carnival, when the importance of properly caring for the physical well-being was brought to the attention of the hundreds of girls who attended, in a most clear and comprehensive manner.

The Dental Department, under the Hon. Dr. Forbes Godfrey, contributed a most attractive dental health display, and the Director of Dental Services opened the Carnival with a short address emphasizing the vital importance and great necessity of properly caring for the teeth and mouth. The dental exhibit consisted of charts, posters and other attractive features which emphasized, in the first place, the harmful results of dental infection, the programme for the prevention of dental diseases and an accurate idea of the various activities conducted by the Provincial Department. The Hon. Dr. Godfrey, Minister of Health, was so well pleased with the educational advantages of such a display, as emphasized in newspaper reports and private letters received by the Department; that he has decided to encourage the repetition of such helpful health enterprises, and consequently a very attractive and instructive portable dental health exhibit will be prepared. This material may be secured by any dental society or other organization willing to undertake an educational effort on a fairly large scale, and will be placed in position and removed absolutely without cost to the organization undertaking to do this important health work. It will, of course, be necessary that the expense be justified, and that is the reason why the Department feels that the undertaking should be, from the standpoint of the members attending, well worth while before a request for this display is sent in to the Department. The decision in regard to this matter will, of course, be left entirely in the hands of the local authorities.

In case any dental society is anxious to initiate a movement of this kind, it will be necessary to obtain the co-operation of other established

health organizations in the district. In most centres they have a Red Cross Society, an Association for the Prevention of Tuberculosis, or some such body of people interested in a phase of health work. By joining up with one or more of these societies, and also soliciting the assistance of social welfare organizations, an arrangement can be made which will bring to the attention of the people the importance of preserving their general health and the part which dentistry plays in connection with public health activities.

Any body of dentists, willing to undertake work of this kind, can secure advice and assistance by communicating with the Director of Dental Services, Spadina House, Toronto.

* * *

Public Meetings



THE public meeting is a very efficient medium to bring to the attention of the people any health message which should be placed in their possession. But in order to have it function satisfactorily, a fairly large attendance is absolutely essential. A poor audience rather reflects upon the importance and the value of the message to be given.

The size of an audience bears a direct relationship to the advance preparation and organization for the meeting. It is usually unwise to rely entirely upon newspaper publicity or even the distribution of handbills. Such a meeting may or may not be a success, depending upon the thoroughness of the advance publicity and the other attractions for the people at that particular time.

It is always well to build the preparations for a public meeting around some permanent organization. You thus have a framework upon which you can absolutely rely, and from this beginning you can easily arrange for a large attendance. A Home and School Club, a chapter of the Independent Order, Daughters of the Empire; Women's Institutes, or any other such body, will give the foundation upon which the organization of a successful public meeting may be built. With this as a starting point, those responsible for the enterprise may be sure of a fair attendance, and from this beginning many others may, by newspaper publicity and personal contact, be induced to take an active interest in the undertaking.

A photograph of the speaker or speakers, and information indicating their ability to efficiently present the subjects they are to deal with, will prove of material assistance by arousing public interest. There are many activities now, in even the smallest localities, that unless a special effort is made to interest the public in any such meeting the attendance is apt to be disappointing. Details in connection with

arrangements for the public meeting should be worked out with the thought in view of making it as easy as possible for the people to attend. This is an excellent means whereby the message of dental health can be brought to the people, but care should be taken to see that the present arrangements made will, as far as possible, induce a large number to be present.

* * *

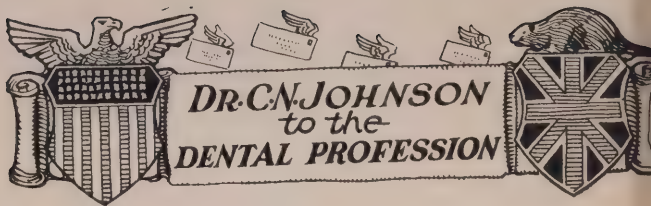
Dental Clinics in Northern Ontario

DR. C. A. CORRIGAN has just returned from a most enjoyable and satisfactory trip through Northern Ontario. He gave very helpful and instructive clinics on the subject of "Orthodontia as Practised by the Family Dentist," to the dental societies at North Bay, Haileybury and Timmins. Reports sent in by these associations indicate that they were well pleased with Dr. Corrigan's efforts, and also grateful to the Department of Health for providing a pass for the clinician on the Government railroad from North Bay to Timmins and return. The Ontario Government has promised to co-operate in every way possible with the profession of dentistry in any effort which may be made to make it easy for the people of Northern Ontario to receive dental treatment. Dentistry can well afford to feel proud of the men who are carrying on in the outlying districts. In some cases they have not all the modern facilities, but yet they are rendering a dental service which will compare favorably with any work done in the other parts of Ontario.

It is hoped that, within the near future, some of the outlying districts in this Province will be organized so that the dentists can perform their work under more agreeable conditions and will be kept in close touch with all that is new and worth while in connection with our professional activities.

NITROUS OXIDE-OXYGEN.—There exists in the minds of many individuals the idea that the administration of nitrous oxide-oxygen is free from danger, and that the production and maintenance of narcosis with this agent is a simple matter.

No anæsthetic is entirely free from danger, a fact that is often overlooked. But there are several features which make nitrous oxide-oxygen by far the safest anæsthetic we have, and one that is pre-eminently the anæsthetic of choice for dental operations. Some of these features are: (1) Ease of induction; (2) the instant availability of volumes of oxygen under pressure; (3) its rapid elimination; (4) its freedom from injurious or dangerous after-effects, either immediate or remote; (5) its wide margin of safety.—*T. C. Bonney, D.D.S., in Dental Cosmos.*"



Up Grade

SOME men sail along blithely enough when the going is on the level, but the moment they encounter a grade they begin to lag. And it is the up grades that count for most in life. Were it not for getting muscled up to meet the grades we would not move smoothly on the stretches. Watch a well-trained horse on the road; when he sees a hill ahead he makes a rush for it, and is up almost before you think. The expert driver of an automobile has learned the same lesson—he knows that if he gets his car well under way as he approaches a hill the momentum will help to carry him to the top without strain. Momentum is a great factor in life, but there are too many men who never employ it. They pause at the bottom of the hill, and conjecture about the difficulty of going up. They lose momentum, and when they finally dejectedly struggle to the top they have expended double the energy they would if they had rushed it. Let us learn to rush the hills of life.

Discouragement is the greatest handicap on a grade, and if we go up the way to it we slacken speed and labor along as if the brakes were on. But if we resolutely face every grade with courage and confidence, tackling the problems one after the other as they come to us, and not dawdling around the foothills of life, we shall ascend the slopes with assurance, and begin to breathe the purer, rarer atmosphere of the heights. The best air is never at the bottom—we have to go up the grade to get it. And there is an exhilaration about coming to the top under speed, and viewing the landscapes of life with the vantage point of elevation. He who is content to remain always in the valleys will never get far in the way of achievement—it is inevitable that the grades must be faced and the obstacles surmounted if we are ever to come into our destined heritage. No law of our life is more irrevocable than the one which says that we must encounter grades. It has been the history of mankind from the beginning, and we cannot hope to be exempt. Grades are good for us—they develop stamina and put us in for

How much easier are the ordinary problems of life when we have

learned to master the unusual and the intricate ones. Emergencies are our greatest blessings in the building of character. To attempt the difficult and the complicated problems, and to overcome them, strengthens us and brings the smile of confidence to our face when the common elements are encountered. To shun a hard situation is to ignore an opportunity—a privilege. We should stand four-square to the world and defy the difficult. To keep in form is one of the major obligations, and the best training is to run up hill.

In order that we may take the grades of life effectually and without too much stress, we must make sure that the machinery is oiled and in good running order. The adjustments must be right and the balance correct. We cannot negotiate the hills when the brakes are set or the bearings rusted. If we dissipate and lower our energy the grades will slow us down and stop us. When a man spends his nights in riotous living and in revelry he cannot scale the mountains of business on his feet the next morning. There is an inevitable jar and knock in the engine of his efficiency, and if he succeeds after desperate effort in getting over the top a few times, his machinery soon wears out and he falls to pieces, a hopeless wreck. The athlete in training for a contest leads an exemplary life; he has to. It is not with him a moral issue, it is a grim necessity. He knows if he did not do this he would fail when the test came—when he encountered the up grade. Humanity may learn a deal from the world of sport.

Most people welcome a grade when they have learned to master it. We all like to drive over a rolling country where the landscape is constantly changing. To travel on the dead level all the time may make easier going, but it becomes monotonous and tiresome. Living on a flat plain, with nothing to break the view, grows deadly in its effect, and sometimes leads to suicide. Variety and change are the established order of the universe, and they tend to development and breadth of vision. If we never ascended the heights, we would never get a glimpse of the valleys, and no achievement of life worth while is ever gained without some hardship. A man should never lament because he encounters a grade; he should welcome it as he would a tonic when he is listless or anæmic. If rushed in the right way it is an inspiration and a blessing. Let us be thankful for the grades.

C. H. Johnson

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MARITIME PROVINCES.



R. BORIS BABKIN, Professor of Physiology of Dalhousie Medical College, addressed the last regular meeting of the Halifax Dental Society on the subject of "Saliva." It is seldom that the society has had the pleasure of listening to so interesting an address. Dr. Babkin worked for a number of years with Pavloff in his work on the digestive tract, and has a fund of interesting and valuable information for the dentist. He spoke of the work that has been done on the saliva by dental investigators, paying particular attention to Dr. Pickerill's work. Dr. Babkin thought that the ideas of the latter relative to the stimulation of the saliva secretion by fruit acids was correct. He dealt in some detail with the constituents of the saliva and the stimuli which cause secretion, mentioning the different nature of the salivas called forth by dry food and by irritating substances. In the latter case there is a free flow of a very watery saliva, which serves to wash away the irritant. He also dealt with the action of the buffer salts, and with the special protein constituents of the parotid secretion in neutralizing acids in the mouth. Dr. Babkin stated that while urea and uric acid are contained in the saliva under certain conditions, the saliva is unlike the blood, in that sugar is not found in it in any condition.



The periodical fight is on at the present time in the Nova Scotia legislature to make some desired changes in the Nova Scotia dental law. At the present time the bill has passed its second reading, but determined effort is being made to tack some amendments to it which will decrease its efficiency.



The profession in the Maritime Provinces has the honor to have at least one member in the present Federal House. Dr. Price, of Moncton, was elected last fall.

Candy For Children

W. A. EVANS, M.D., CHICAGO.

MISS LYDIA ROBERTS says in *Hygieia* we should postpone as long as possible the day when the child is given its first piece of candy. Grandparents, parents, older brothers and sisters and nurses—all take notice.

Both the facial expression and the behaviour of a baby tasting candy for the first time are peculiar and interesting. Attendants like to watch the performance. Like other performances, the act is paid for. The baby pays. So does the family.

The hard candies are composed of sugar and flavors. Some of them contain fillers, harmless in character, as a rule. The soft candies contain sugar, flavors, milk, and, in some instances, butter or other base, fillers and nuts or fruits. Most of the elements contained in candies are rich in calories. Sugar is. So are milk and butter. These calories are of a kind that can be readily converted into energy. Babies are exceedingly energetic. They need energy foods. As sweets are a source of energy, why not feed candy?

The reason is that the disadvantages more than offset the advantages, so far as children are concerned. Candy can be charged with sins of omission and commission. While it is rich in calories, it is poor in proteins, vitamins, and minerals. Babies fed on candies suffer from lack of the proteins needed for repair, lack of the lime and phosphorus needed by the bones and teeth, lack of iron needed by the blood; of the vitamins needed to protect against scurvy and those needed for growth. Miss Roberts says: "It is better to allow the body to make its own sugar. Continued walking on crutches is bad for the legs." This should be added to the list of sins of omission.

The sins of commission are quite as harmful. Candy is to be classed with the condiments. It contains aromatic oils, just as pickles, mustard, horseradish, and salad dressing. Sugar itself is a condiment. The child who eats candy thereafter finds milk, water, bread, and cereals flat and tasteless. Eating candy is one cause of finicky appetite. Its use is to be condemned because it takes away the child's appetite for plain, simple, wholesome, nourishing foods supplied from the table at regular meal hours.

The eating of candy between meals by children destroys wholesome appetite for wholesome food at wholesome hours.

Don't expect poor work now to lead to brilliant work hereafter.

Officers of Canadian Dental Organization

Oral Health will be Pleased to Receive Additions or Corrections that Directory of Names May be Kept as Accurate as Possible.



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ENTH INTERNATIONAL DENTAL CONGRESS—August 23-28, 1926, Philadelphia, Pa.

Fifteen Years Ago

EXTRACTS FROM *Oral Health* PUBLISHED IN 1911.



As a profession we must go forward to the task of public enlightenment on dental matters, fearlessly, energetically and persistently, that we may emblazon in the public mind the thought that the modern dentist is not merely a dental surgeon, but also a dental physician. Let every dentist also keep that idea in mind; a dental physician who practises Preventive Dentistry.

* * *

THE UNEMPLOYED.



ONE of the most difficult questions with which the sociologist has to deal is the question of the unemployed.

The dental profession also has its own great problem of the unemployed to solve. The problem of the vast army of good, sound, healthy but unemployed teeth. Teeth that are able and willing, but are given insufficient work to do. If properly employed they would be cleaner, stronger and healthier, and have years of useful service added to their otherwise short, painful and unhappy lives.

The most concern is not felt for the unfit and decrepit teeth. They have a valid claim upon their owners to procure for them proper attention. The greatest anxiety is exercised over the good sound teeth that are able for work, would be better with it, and yet are denied their legitimate needs. Not that there is lack of work for such teeth to do. The problem is not one of *more food*, but of *food better masticated*. The question is a present-day problem, because the owners of these unemployed teeth choose the easier way than to give their teeth proper health-giving exercise.

This is the great *problem of the unemployed* that the dental profession is endeavoring to solve.

Its solution is part of the propaganda which has become popular known as "dental education."

Is your shoulder to the wheel?

* * *

MOUTH HEALTH AND CITIZENSHIP.



THE time is coming when every prison and hospital and reformatory institution will have its dental department; attention will be paid to the teeth as elements of good citizenship. I know that every school board should have its dental member. Medical and dental inspection of our schools is coming, but you know as necessary corollary to mental education is brain with health. If you allow the one at the public expense, you must allow the other, because it is folly to educate the minds of the people in bodies that are unable properly to wield the mind.

Oral Health

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TORONTO, MARCH, 1926

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EDITORIAL

Post Mortems in Dentistry

NE of the most baffling and at the same time the most vital question before the dental practitioner to-day is that of the retention or extraction of pulpless teeth. The problem cannot be scientifically determined in the aggregate, as each case must of necessity be diagnosed individually. It may seem quite definite to advise that "if conditions are favorable to apical repair, or if such repair has already occurred, extraction is unwarranted," but the difficulty is that present methods of diagnosis are so deficient that such conditions cannot be accurately determined. And when upon this problem is superimposed that of the possibility of infection, the difficulties of diagnosis are further magnified.

A factor that should always be kept in mind is that of the general health of the patient. If there are present symptoms of disease of local infective origin, all possible sources of focal infection naturally come

under suspicion. But even in these circumstances, there is no reason why the teeth should be first condemned, while the intestinal tract, tonsils, and other possible sources of infection are ignored. A lack of appreciation of the value of the teeth frequently leads to their extraction before the source of the infection has been determined. The practitioner who, upon the mere indications of radiograms, and without a complete clinical knowledge of the case, advises the extraction of the teeth, is surely following a course that is, to say the least, radical. Upon the other hand, when the patient's health is good, and without evidence of focal infection, to advise the extraction of teeth because they may be under degree of suspicion is equally radical.

We need more *post mortems* in dentistry. Following extractions, teeth should be studied bacteriologically, and under the microscope, to learn how far the diagnosis in each case was correct. Indeed, in many cases bacteriological tests might be made before extraction. It is in these directions that the facilities of universities and departments of health should be used by the dental profession. The faculties of dentistry, in particular, should lead in these important research problems. The profession looks to the faculties for guidance and leadership. In the interest of public health, and the advancement of dental science and practice, dental departments, with their better clinical and laboratory facilities, are expected to make a more definite contribution to the solution of these difficult problems. Members of dental faculties themselves are at wide variance in the diagnosis of radiograms, even when a complete clinical history is available. The logical procedure would be to "*post mortem*" every extracted tooth and compare the radiogram and clinical history with the histo-pathological report of the laboratory. Such case histories would prove of great value to the entire profession, and lead to some more definite method of diagnosis. The need of the hour is to save the teeth that ought to be saved, and extract the teeth that ought to be extracted, in the interest of the patient's health. So long as the opinions of dentists themselves are at such variance, we cannot complain about the views of the physicians. The solution lies in part in *post mortems* of extracted teeth.

PREVENTING THE STICKING OF MODELLING COMPOUND.—To prevent the sticking of softened modelling compound to the fingers of the operator and burning them, the hands should be thinly coated with vaselin oil. By applying a thin coat of the same oil to the surface of the soft compound, its adhering to the teeth or mucous membrane, hence distortion of the impression, is avoided.—*Journal Odontologique*.

IT IS THE nature of man, as distinguished from the beasts, that he can by conscious effort better his standing in the material world. Characteristically a man is a worker, a creator of values, a world-maker. He alone, of all living things, can conceive designs and execute them, can imagine conditions that do not exist and then by patience bring them to pass. To take the world wholly as one finds it and leave it so, is brutal. A man is a man only because he is a wealth-producer, an enricher of existence.

—Charles Ferguson.



W. GEORGE BEERS, L.D.S., D.D.S.
1843 1900

ORAL HEALTH

*A JOURNAL THAT STANDS FOR THE OUNCE OF
PREVENTION AS WELL AS THE POUND OF CURE*



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TORONTO, APRIL, 1926

No. 4

An Appreciation—W. George Beers

DR. W. GEORGE BEERS was born May 5th, 1843, in the city of Montreal, where he received his early education. He trained as a dentist in the office of Dr. Dickenson, Montreal, after which he started practising for himself in 1865. He obtained the degree of L.D.S. of the Province of Quebec, and also of the Province of Ontario in 1870, and subsequently the same degree in England. When the Dental College of the Province of Quebec affiliated with Medical Faculty, Bishop's College, Montreal, the degree of D.D.S. was conferred upon him.

Dr. Beers lectured in the college and held the position of Dean of the Faculty until he severed his connection with the college. He was an honorary member of nearly all the provincial dental societies in Canada, and a corresponding member of several British and American societies.

Outside the dental profession Dr. Beers was also very well known. He served at the front during the Fenian Raids of 1866 and 1870, and organized a company largely from the Montreal Lacrosse Club; retiring with the rank of Captain in 1881, he became a member of the Victoria Rifles Reserve. Dr. Beers is known throughout Canada as "The Father of Lacrosse," and wrote the first set of rules for the game, which are practically the rules in use to-day. He visited Europe on several occasions as Captain of Canadian and Indian lacrosse players, and contributed series of articles to leading American magazines on Canadian sports and pastimes.

Dr. Beers died on December 26, 1900, and to quote from a Montreal daily: "A well-known dentist, a fearless patriot, a famous athlete, an efficient militia officer and a much-respected citizen passed away in the person of Dr. William George Beers."

Diet as a Factor in Dental Diseases*

PERCY R. HOWE, D.D.S., BOSTON.



THROUGHOUT all specialties in medicine to-day, there is a growing tendency to return to a closer study of the fundamental processes of the body. No specialty has been keener to recognize this need than dentistry. Certainly there is no more fundamental process than that of the conversion of the raw material of the diet into tissue. It is on this process that life itself depends, whether we consider that of the single cell or that of the aggregation of highly specialized cells which we term the body. Following the feeding of faulty diets to animals, we find tissue changes in various parts of the body, such as in the eyes, the digestive system, the nervous system, and in the bones and the teeth. Growth may be arrested and reproduction prevented. If the disturbance has not been too severe or of too long duration, these faults are corrected by improving the character of the diet. On the other hand, animals that are fed on a normal diet grow well, reproduce well, are extremely resistant to infections, and their organs are found to be in a state of health. The evidence that the diet is of fundamental importance in health is conclusive.

The movement in modern life towards living in smaller and more crowded quarters, elegant and sanitary as these may be, has the disadvantage of removing people from the source of supply of their food stuffs. The food, in consequence, must undergo treatment of some sort for its preservation over considerable periods of time. Methods of food preservation have reached a high state of perfection, yet in all preserved foods certain elements are lost or their potency greatly diminished. Also many important elements are either extracted or destroyed during the various cooking processes to which all of our food is subjected. Owing to the character of our food preparations, perverted appetites are created, and in consequence foods are usually selected for their taste or appearance, without regard to their nutritional value, so that the common phrase that we "live to eat," instead of eating to live, has some element of truth in it. Food we have in abundance. At our doors are foods from the Arctic and from the Tropics. The Alaskan salmon and the Tropical banana may be obtained at any time. There is no lack of food material, but a plethora, hence the need for a sufficient knowledge of the effects of various foods to enable us to intelligently select such as will give us health and sound teeth.

*Read before the Academy of Dentistry, Toronto, March, 1926.

Degeneracy diseases, statistics show, are on the increase. Diseases of the kidney, of the heart, or of the gastro-intestinal tract—nervous disorders, cancer, defective eyes, defective teeth, are only a few of the diseases of modern life and are the replica of disturbances which have followed irregular diets fed to experimental animals.

Americans have been called a race of dyspeptics and the term "American teeth" has characterized white beautiful teeth which are prone to decay. During the great war, when the manhood of various countries was massed for physical examination, defects of the kind mentioned were found to be astonishingly prevalent and defective teeth were especially in evidence.

Sir Arthur Keith has said that the teeth are evidently the first part of the body to degenerate. This is apparently true in animal experimentation and suggests the correct sequence in the relationship of dental to degenerative diseases. I am not one of those who attribute degenerative diseases to dental conditions—I feel rather that dental conditions are significant indicators of bodily changes which will eventually lead to bodily disaster.

Diseases of the teeth and bones relate especially to the subject of mineral metabolism—yet while experimental study shows that specific food substances directly affect calcified structures, this represents but one phase of the subject. A more extended study indicates that there are many things which may influence mineral metabolism and hence calcification. The problem appears to be one of relationship, or equilibrium of balance, of adjustment.

The experiments of Pappenheimer and of McCollum on rickets show that a given ratio between calcium and phosphorus needs to be maintained to prevent this disease. Mrs. Mellanby finds sound teeth in young dogs when the amount of calcium in their diet is low, providing sufficient cod liver oil is given. The fluids of the body are so constituted that they maintain their stability under quite adverse circumstances. The buffer properties of the blood and of the saliva are well known examples of one sort of compensating adjustment—for within quite variable limits their hydrogen ion concentration remains the same. In such diseases as rickets or osteomalacia, or in carious teeth, as we have found from analysis, nature counterbalances the calcium loss by substituting magnesium.

One of the first general considerations in food selection, from a dental point of view, is perhaps to choose those which contain an abundance of mineral elements, since teeth are so largely made up of inorganic material, and further, since these may be withdrawn in case of general systemic needs. Modern diets do not always contain as much of the mineral elements as is necessary to meet bodily require-

ments. Milk, vegetables and fruits are the best source of inorganic salts. Whole grains contain more than refined grain products. These foods are, therefore, advocated as being of especial value in bone and tooth construction.

The digestibility of foods is another consideration. For young infants or children, mothers' milk is preferable to any substitute, as being in every way adjusted to the requirements of the child. Human milk differs from cows' milk in many respects; for instance, it is more finely divided during the digestive act. This leaves more surface area for the digestive enzymes to act on. Mothers' milk contains more lactose or sugar than is found in cows' milk. This tends to regulate the character of the intestinal flora and to keep it normal. The normal intestinal flora of infants is aciduric, which prevents an overgrowth of the proteolytic type which induces toxemias. Again, mothers' milk contains less protein than cows' milk, and in a different proportion—i.e., less casein and more lactalbumen—factors which also act to prevent auto-intoxication. Especially do I desire, at this point, to direct your attention to the amount of protein in this natural food which meets the bodily requirements during a very active growing and bone forming period. Cows' milk contains about four per cent. of protein; mothers' milk only about two per cent.—yet these low amounts of protein in perfectly proportioned foods meet the bodily requirements.

It is well understood that cows' milk needs to be modified for the use of the infant. The curd of cows' milk is dense and large clots are formed. These being only partially digested cause alimentary disturbances such as constipation. The calcium of the milk is often encased in the milk clot and excreted unutilized. Cows' milk, on account of its high buffer properties, lowers the natural acidity of the infant's stomach to a degree in which the pepsin cannot act to its fullest advantage. To overcome this difficulty $N/10$ HCl is given in order to raise the hydrogen ion concentration to a normal point. On account of the danger of infection, cows' milk needs to be sterilized. Here again complicating factors arise; no animal can live on pasteurized milk. The antiscorbutic vitamine is thus destroyed and orange juice or some other source of this food factor must be supplied.

While I might mention various other modifications of cows' milk intended to make it more suitable for the use of the infant, enough has been said to show that mothers' milk is infinitely better suited to the needs of the infant when it can be furnished.

There is considerable evidence which shows that the teeth and arches of children who have been nursed by the mother are better than those children who were artificially fed early in life.

After milk, the most available sources of lime and the other mineral

elements are the fruits and vegetables. These have the additional advantage of providing roughage, and the fruits at least may be eaten raw. Raw foods, with few exceptions, are more easily digested than cooked foods. Cabbage, for instance, in a raw state is easily digested, while cooked it is extremely hard to digest. Lusk found that raw foods stayed in the stomach about an hour and a half, while cooked foods remained about two hours and a half.

Our experience in the laboratory leads us to believe that too concentrated foods are not desirable, i.e., foods from which practically all the indigestible material has been removed. A certain amount of bulk or roughage in the diet improves markedly the condition of the animal. The digestive tract of an animal which has received considerable cellulose or roughage is clean, the absorption walls normal and the musculature well developed. The coating of the tract of an animal fed a pasty and concentrated diet is thick, congested, atonic and often covered with mucus and slime. Absorption must take place through the intestinal mucosa, and here as well, certain acts of digestion take place. By lightening the food mass—by regulating the passage of the food from one digestive compartment to another and by its physical effect on the gut wall, roughage, apparently, is an important factor in the diet. Animals with a clean intestinal tract have a clean normal mouth, and vice versa.

Vegetables, fruits and whole grains are foods which contain considerable roughage. Perhaps there is no substance in foods which have been so much discussed as protein. There have been the advocates of high protein in the diet, and those who are equally certain that low protein is best for health and longevity. The relation of protein to mineral metabolism has received but passing attention. In regard to this subject I shall base what I have to say on the effects we have observed, principally in monkeys.

I have already especially directed your attention to the amount of protein contained in milk. Sherman has stated that modern diets are not apt to be deficient in protein. Our experiments agree with this idea and they further suggest that modern diets may be too high in protein. As our experience has been extended, we have found that animals do better on low protein.

The most rapid caries which we have produced in monkeys occurred on high protein diets. I have several specimens of the teeth and jaws of guinea pigs fed on high protein diets which show extensive decalcification. In control animals, in whose diet starch was substituted for protein, no dental or bone changes have been detected. I am unable to offer an explanation—I merely state a fact. I was interested to note that in a review of studies on nutrition, which appeared in the

London Spectator, it was stated that low protein was winning out all along the line. Our own work confirmed this and indicates that protein excess is capable of doing considerable harm.

The amount of fat in the diet is another subject about which there has been considerable difference of opinion. Some believe that too much fat in the diet leads to a soap formation with calcium, and that the lime is then excreted unutilized. Others have concluded that the best calcium retention occurs when there is considerable fat in the diet. Especial attention has of late been given to the character of the fat, and its value has been rated according to its vitamin content. Mellanby, Korenchevsky and others have held that the fat soluble directly controls calcium metabolism, and hence calcification. More recently, however, a distinction is made between the fat soluble vitamin and the anti-rachitic, or that occurring in cod liver oil.

It has been our experience that in feeding monkeys the amount of fat in the diet must be kept below the point where it might cause too active movement of the bowels, or too soft and bulky stools.

Professor Wolbach and I have studied the effect of a deficiency of the fat soluble A on rats. On autopsying the animals we have not found any bone changes. The teeth have shown minor changes. The specific effect of this deficiency appears to be on epithelial tissues where the normal epithelium is replaced by a keratomized squamous epithelium. From the dental aspect the effect on the salivary glands is of especial interest since they become in part filled with this abnormal tissue and lose their ability to perform their specific chemical functions. The amount of saliva is also diminished.

The effect of cod liver oil on rachitic bone is probably not due to fat soluble A content, but a new term, anti-rachitic vitamin is already being employed by some investigators.

Of the three groups of vitamins which have been most thoroughly studied by numerous investigators, the antiscorbutic is the only one which directly affects calcified tissues. The teeth are among the first structures to show changes in a deficiency of the antiscorbutic substance. The pulps show the effect of this deficiency in from five to seven days. In our opinion the scorbutic state may be characterized as one affecting supporting tissues in which the cells are unable to produce and maintain the intercellular substance. This condition affects various supporting structures to a different degree and is most marked in those in which the intercellular substance is calcified—that is to say on the bones and teeth.

Another aspect of mineral metabolism which seems to me of fundamental importance is the acid-base equilibrium in the body. It controls largely the H ion concentration of the body fluids, cell permeability,

nervous irritability, muscular contraction and bacterial infection. Shohl in his illuminating monograph on this subject has selected analyses from accurate sources which indicate the requirement of infants and young children for a considerable excess of basic elements, over acid radicals. Bibby has made the interesting suggestion that the lack of a supply of the basic elements in foods, among which is calcium, might be a factor in caries. The fetus during the last one hundred days of life requires a very considerable amount of basic elements over acid and this affords an explanation for the caries of pregnant mothers.

A large proportion of the basic radicals are used for bone and tooth formation, but calcium may be withdrawn from calcified tissues to maintain the alkalinity or neutrality of the body fluids if an excess of acidic radicals is furnished in the food.

The ash of protein and of cereals is acidic, while that of fruits and vegetables is basic, and milk is slightly basic; apparently the latter foods are best for building and maintaining sound teeth.

Throughout this paper I have assumed that dental defects have resulted from metabolic derangement. This has been the only way in which dental pathology has been experimentally produced.

I have shown in other papers that caries, pyorrhea and irregularity of the teeth have followed metabolic derangement. This may be readily understood in the case of pyorrhea and irregularity of the teeth, or in teeth in the process of formation, but it is not so readily understood how caries may result. For this reason I have recommended withholding an opinion as to the exact explanation of caries. Since we have not succeeded in producing caries according to our previous theories, but since it has followed metabolic disorders, I should like to mention one or two matters which indicate that the teeth are much more labile than has been previously thought.

We have been taught that the teeth are all alike chemically and physically, and that formed teeth cannot change in their composition. We have found by analysis that not only do different teeth show chemical differences, but that the calcium content of the same tooth differs. The crown of the tooth contains the most calcium—the root end the least. The calcium content diminishes from crown to root tip. Elsewhere I have shown that carious teeth contain more magnesium than do sound teeth. Mr. Logan has since verified this in our laboratories. The tests just mentioned were also carried out by him. Toverud's work in our laboratories I have previously described. After leaving my laboratory he did work of his own on rats which showed that formed teeth had changed in their chemical composition. We have observed in some of our monkeys that formed teeth have become almost wholly decalcified.

The fact that a suitable dye stain is carried from the peritoneal cavity through the dentine to the enamel, shows that products from the abdominal cavity may penetrate the dentine. Levy, and more recently Aub, working on lead poisoning have found the lead deposited in the dentine of the teeth of their animals, and that rapid and marked caries occurred in cats which, normally, are free from caries.

These few facts are mentioned with a view to indicating that metabolic processes do produce dental effects heretofore unsuspected, and afford grounds for suggesting that we observe dental conditions from the metabolic aspect. At a later time I shall have more to say regarding this matter, but must leave it for the moment and pass on to look, with you, at the diets of primitive people who are generally free from dental disorders.

Most of the investigation regarding the diet of primitive people in its relation to caries, has been conducted on the principle that the cause of caries has been solved by Dr. Miller. Hence the amount of carbohydrate in the diet has been especially considered or the fineness of the food with a view to stagnation. Dr. Pickerill has emphasized its property of stimulating or depressing salivary flow. An abundant flow, according to him, causes a greater amount of total alkalinity or acid neutralizing property of the oral fluids.

From what has been learned, through recent research, it would appear to be worth while to examine primitive diets from a different aspect.

There does not seem to be much question but that diets of game, fish, milk, fruit and vegetables, roots, nuts, etc., contain large quantities of the mineral elements, and as these foods have received but little treatment, these inorganic constituents are left in the proper proportion for bone building.

Such diets are much coarser, as a rule, than modern diets, hence they contain a large proportion of roughage, the effects of which we have already discussed.

The foods are often taken raw, or they are but little cooked. Such processes of cooking as are used conserve many elements which in modern processes are lost.

These diets contain more basic radicals than acidic. I doubt if on the whole they could be considered to be high in protein. Even the diet of the Eskimo, who is really considered a large flesh eater, will bear investigation from this point of view. Fat is taken in large quantities. The deer are sought in the season when they have much fat. The fat of fish and seals is also used largely. In addition, the Eskimos use for food some twenty kinds of herbs, berries, and edible mosses. It is doubtful if their diet averages much over twelve per cent. of protein.

On account of the zone in which they live, and on account of the

small amount of carbohydrate in their diet, they probably utilize fats in a different manner from those who live on better balanced diets—and again the fish oil probably contains properties similar to that of cod liver oil.

Taking so much of their food raw furnishes them with an abundant supply of the antiscorbutic vitamine.

The diet of such races as the Maori or South African tribes is made up largely of fruits, vegetables, nuts, roots, etc., These diets appear to be excellent from a dental point of view, as do those of races who live to a considerable extent on milk.

Not long ago I had the pleasure of listening to a Professor of Anthropology describe a trip which he took into the Northern Himalaya Mountains. He spoke of two races who for many years had lived in two distinct valleys walled off from each other and from civilization. He remarked on the distinct physical superiority of one race whose diet consisted of fruit and vegetables, over the other race who lived on cereals. The climatic zone was similar to that of New England.

From the nature of our laboratory work we have had many interesting conferences with medical travellers who have been in regions but little visited. I shall merely refer to one incident in which an account was given of the life of some Monks who lived almost wholly on fruits and vegetables, a little meat being taken only on feast days. This traveller spoke of the fine stature and physical condition of the men of this religious order.

We might consider innumerable cases which demonstrate the same thing. However, on the whole it seems that in the zone in which we live and from the life which we lead, in our diets we should use more milk, vegetables and fruit, and less meat and cereals. I am well aware that many will not agree with such a conclusion, and I can only say that I have arrived at this opinion from a study of a number of animals which has extended over a considerable period of time. A review of similar work done by others substantiates the same idea.

In these studies it has been quite evident that the best general health and the best teeth have resulted from the diets here advocated, while disaster has followed a departure from them.

It is these foods which contain the mineral elements, and with a preponderance of basic constituents, the low protein, the roughage and the vitamins, from a dental point of view herein is prevention, rather than in so artificial a process as the cosmetic use of tooth lotions, pastes and powders.

The only influence worth having is the influence you yourself create.

Historical Sketch of Fifty Years of Dental Progress in the Province of Quebec*

F. A. STEVENSON, D.M.D.

IN recording the history of dentistry in this Province, we naturally recall the names of the men to whom we owe most of our advancement as a profession. Among the pioneers the Spooner brothers must be mentioned first, for although they lived and practised dentistry in Montreal many years before the incorporation of the dental profession by Act of Parliament, they were men of education and ability, and made contributions of value to the progress of the profession in their day.

John Roach Spooner, the elder brother, came to Montreal from the United States in 1830. At that time porcelain teeth were being introduced into Europe and the U.S.A., but had not been heard of by the laity in Montreal. Spooner at once saw the value of porcelain as a substitute for bone and ivory, and devoted much time and attention to its production. He soon became celebrated, and had a large practice. But the process of producing porcelain teeth by Spooner's method was too complicated for their manufacture in commercial quantities. J. R. Spooner will always be remembered as being the man who gave to the profession the formula of two parts arsenious acid and one part acetate of morphia for the devitalization of the dental pulp. His directions to make the application of a minute quantity to the dentine near to the exposure were omitted from the text-books, with the result that excruciating pain followed its use in the majority of cases. But in the "good old days" patients did not believe they were receiving their money's worth unless they were able to feel the medicine at work. Spooner the younger learnt dentistry from his brother. He became the literary man of the family. He published several professional books, including "Guide to Sound Teeth," "Care and Preservation of the Teeth;" an essay on the "Manufacture of Mineral, Porcelain or Incorruptible Teeth;" also a treatise on "Surgical and Mechanical Dentistry." He published several works on art and artists, and an edition of the New Testament illustrated with beautiful engravings by Italian artists.

The elder Spooner died in the spring of 1838, thirty years before the Act of Incorporation of the Dental Association of the Province of Quebec.

1869 is the date we celebrate to-day. It may be of interest to take

* Delivered at banquet held in celebration of the Fiftieth Anniversary of the incorporation of the College of Dental Surgeons of the Province of Quebec, December, 1919.

a brief survey of the field of dental practice at that time. The first thing that strikes us is the fact that the importance of aseptic surgery was not understood at that time. The germ theory of infection was being investigated by Pasteur and Lister, but was not accepted by the rank and file of the medical profession. Lister was experimenting with pure carbolic acid in treatment of compound fractures, but he had not found a disinfectant which could be safely used in general surgery. Sterilization of instruments was unknown to dentists. The favorite anæsthetic was chloroform poured on a handkerchief and held to the patient's face. Ether and nitrous oxide were used, but were more popular in the U.S.A. than in Canada. When a tooth had been devitalized, either by neglect or by the use of arsenic, the usual course of treatment was to scrape out the portion of the pulp in the crown of the tooth and to put in an amalgam filling, the patient being warned that, in the event of an acute abscess within the next few months, upon the inflammation subsiding a sinus would appear which would prevent another acute attack. Extraction of teeth and the making of rubber plates occupied most of a busy dentist's practice. Gold fillings of non-cohesive or "soft" gold were very largely employed, although cohesive foil was being used by the younger men who had been to the dental schools in the U.S.A.

We now come to the records found in the first Minute Book of the Dental Association of the Province of Quebec:

"On April 20th, 1869, the first meeting of the Board of Trustees and Examiners of the D.A.P.Q. was held in the office of Dr. Bernard, the following members being present:—A. Bernard, P. Baillargeon, C. F. F. Trestler, J. H. Webster, J. A. Bazin, J. McKee, G. W. Beers. A. Bernard was appointed Chairman, and W. G. Beers, Secretary *pro tem*.

"The Chairman read the Act of Incorporation and the Secretary fully explained the powers it gave the Board.

"The election of officers then took place, the Quebec members requesting that the offices should be filled by Montreal men, to facilitate the working of the Association. The following were elected:—President, A. Bernard; Treasurer, J. A. Bazin; Registrar, C. F. F. Trestler; Secretary, W. G. Beers."

At a meeting held the next day the subjects for examination were divided as follows:—Institutes of Dentistry, A. Bernard; Dental Anatomy, C. F. F. Trestler; Dental Pathology, P. Baillargeon and W. G. Beers; Mechanical Dentistry, J. H. Webster; Dental Chemistry, C. Brewster; Filling Teeth, J. A. Bazin; Anæsthetics, E. Lefebvre; Irregularities and Anomalies, H. D. Ross; Dental Surgery, J. McKee; Dental Hygiene, M. Pourtier.

The Minute Book does not say whether all the above examiners were

members of the Board, or whether the Board consisted of those attending the first meeting at which the officers were elected.

All practitioners of dentistry who had resided in the Province for two years previous to the passing of the Act were entitled to be entered on the register upon payment of a fee and without examination. Of those who served on the first Board, either as officers or examiners, not one is living to-day. A. Bernard, our first President, was a man of force of character and of more than ordinary executive ability. He became Mayor of Montreal in 1873. The late Mr. Robb, who was City Treasurer for years, said of Dr. Bernard that he was one of the most able men who had been Mayor of Montreal during his (Mr. Robb's) term of service. The citizens owe a debt of gratitude to Mayor Bernard, for he played a leading part in the acquisition of the property now known as Mountain Park and Fletcher's Field.

Dr. P. Baillargeon was a resident of Quebec. He was for many years our President, and was able to give valuable advice and help in piloting the Board through the lobbies of the Provincial Legislature in the early days. I believe that Dr. Baillargeon became a Senator in 1874. The following paragraph is found in the first Minute Book:—"Moved by E. Casgrain, seconded by M. Pourtier, and carried unanimously: That this Association presents its congratulations to the Hon. Dr. Baillargeon for the great testimony of esteem he has received from the Dominion on being chosen to one of the most distinguished positions of the Upper Chamber; an honor which reflects great credit upon his private and public character and also upon the profession."

C. F. F. Trestler was one of the pioneers in dentistry in Montreal. He began to practise here in 1855 and continued in active practice for more than fifty years. Dr. Trestler was a man of quiet and retiring manner, very courteous in his bearing. He was a typical Frenchman in appearance and always wore the dress suit which now we reserve for evening wear. Nervous applicants for license always felt a thrill of gratitude to Dr. Trestler for his genial smile and kindly pat on the shoulder with which he tried to encourage them.

J. H. Webster was an eccentric character who had a passion for collecting clocks and watches, and what was more, he could make them keep time. His house was alive with all sorts and conditions of time-pieces. Dr. Gardner tells us that he had a steam boiler which announced the noon hour by a blast on a whistle.

J. A. Bazin came to Montreal from Boston in 1855, he and Dr. Trestler beginning practice in the same year. Dr. Bazin was a man of sterling character and very soon had a large family practice. He was a staunch prohibitionist when prohibition was anything but popular. He took an active interest in the formation of the Montreal Philharmonic

Society and the Mendelssohn Choir, and sang in both these societies for many years. Dr. Bazin lived in Boston at the time of the discovery of anæsthesia by the inhalation of ether, nitrous-oxide and chloroform. When anæsthetics were to be used in his practice he preferred to administer them himself. He generally used chloroform.

E. Lefebvre, of St. Johns, was one of the first Board of Examiners. He was a graduate of the Harvard Dental School. Dr. Nolin tells us that Lefebvre went to Paris as assistant to Dr. Evans, of international reputation, soon becoming associate.

The brothers Brodeur, of St. Hyacinthe, were in practice some years before the Act of Incorporation; they migrated to Marseilles, France, and became quite celebrated, their patients coming from all parts of Europe to consult them.

W. George Beers was probably the most versatile and brilliant man who has adorned our profession in this Province. He was born in Montreal, May 5th, 1843. His ability as a dentist and as a literary man was recognized throughout Canada and the United States; he was also well known in England. To Dr. Beers' efforts, more than to any other, we owe the Act of Incorporation which to-night we are celebrating. For many years he carried the welfare of the profession in this Province on his shoulders, being either Secretary or President of the Board of Trustees and Examiners. When the Dental College was formed, Beers took the leading part in its formation, and was its Dean until he retired owing to failing health. He was honorary or corresponding member of the leading dental societies in Canada, England and the United States. Beers edited and published the *Canadian Journal of Dental Science*, the first dental journal published in Canada. When that expired he became the editor of the *Dominion Dental Journal*, and did much to kindle the fraternal spirit among the members of the profession by his spirited and able articles. Dr. Beers was of Irish parentage, and he inherited the charm of manner and ready wit for which his countrymen are so justly celebrated. He wrote brilliantly for the magazines of the U.S.A., generally on national topics.

Amateur sportsmen owe the rules of our national game of lacrosse to Dr. Beers. He did much to introduce the game into England. In 1876 he organized a team of Canadians, and one of Indians from Caughnawaga, which toured England, Ireland and Scotland. In 1882 he again toured the British Isles with a lacrosse team, but this time he distributed to the audiences who attended the lacrosse games an illustrated pamphlet on the resources of Canada. This pamphlet had been prepared by himself and was printed by the Dominion Government. Dr. Beers died in December, 1900. A Montreal paper of that day said of him: "A well-known dentist, a fearless patriot, a famous athlete, an efficient militia

officer, and a much-respected citizen passed away in the person of Dr. William George Beers."

E. Casgrain, of Quebec, was an inventor as well as a dentist; he applied the principle of casting under pressure many years before Dr. Taggart introduced his celebrated casting machine.

L. J. B. LeBlanc was one of the early members of the Board, who became its Secretary in place of Dr. Beers. Dr. LeBlanc took great pleasure in serving the profession at all times; when our first dental infirmary was opened he became its superintendent, devoting half of every day to the work, at a merely nominal honorarium.

C. Brewster. The following items are contributed by Dr. Brewster's daughter (Mrs. Leveson-Gower) and Dr. C. F. Morison: Dr. Charles Brewster was born of English parents in Stanstead in November, 1835. He studied dentistry with Dr. Dickenson in Montreal, attending McGill for his medical lectures. About the year 1880 he retired from the practice of dentistry to manufacture the "Windlass" skate, but this did not prove to be a success financially. He, therefore, resumed the practice of dentistry in 1896. Dr. Brewster was greatly interested in trying to improve the preparation called Lycoperdon which was obtained from the puff-ball and was a good hæmostatic. When Dr. Brewster began to practise in Montreal, "Regular" soldiers were stationed there, and he had many intimate friends among the officers, who tried to persuade him to take up the military life. Dr. Brewster's name is perpetuated in Lachine, Brewster Avenue being named after him. He died in December, 1905.

S. Globensky was a partner of Dr. Trestler. He served on the Board of Examiners for many years, and before the Dental College of the Province of Quebec was merged with the Universities Dr. Globensky was on the faculty as Dean.

The first meeting of the Dental Association of the Province of Quebec was held on the 19th of September, 1871, in the Mechanics' Hall. The Mechanics' Hall was on St. James Street, at the corner of St. Peter Street, immediately opposite the Merchants Bank.

At first the meetings of the Association were held every second year, the Board meeting from time to time at the call of the Secretary or President. There being no dental college in the Province, students of dentistry attended the medical schools for their primary subjects, and learnt the special dental subjects in the office of a practising dentist. In 1879 it became necessary for dental students to be indentured to a preceptor. The course at first was for three years. Those students who wished to attend recognized colleges in the U.S.A. could do so, and have their time spent at college deducted from their time of indenture. In 1882 the course for students was extended to four years.

At the meeting of licentiates, held in 1883, it was decided that to meet once in three years would be often enough. The men of those days did not wish to see too much of one another.

In 1891 the Association adopted as a requirement for license the Oath of Loyalty to the rules and regulations governing the practice of dentistry in this Province.

In April, 1892, the Board, having decided to establish a College of Dentistry, approached the authorities of Laval and McGill Universities with a view to affiliation, so that their students could obtain a suitable degree upon the completion of the prescribed course. Several conferences were held. The chief point of debate was the degree to be conferred by the universities. The Dental Board would accept nothing less than the Doctorate. The McGill authorities were guided by the recommendation of their Medical Faculty. These gentlemen, notwithstanding the fact that the degree of D.V.S. was already granted by the universities, thought that the dentists should be satisfied with the degree of Graduate in Dental Science. Laval naturally declined to grant the Doctorate if McGill did not. The Board, in the meantime, had appointed a Dental Faculty, and lectures and clinics began in the autumn of 1892. The value of the course to the students was so marked that at the examinations held in the spring of '93 the Board passed a special resolution of congratulation to the Faculty of the Dental College.

The college was housed in various locations, of which Dr. J. G. Gardner gives us the following interesting account:

"The premises, No. 2 Phillips Square, North West corner of Cathcart Street, where Birks' store now stands, were rented from A. Joyce for a period of four years and six months, at a rental of \$700 per year and taxes. The lease was signed by the late Dr. G. Beers, the late Dr. Hugh Berwick and Dr. J. H. Bourden, who is still with us."

In September, 1892, the D.A.P.Q. (now the College of Dental Surgeons of the Province of Quebec) voted the sum of \$500 towards the equipment, the rest being provided through the donations of the dental practitioners. The public, although appealed to on more than one occasion to subscribe towards dental education in this Province, have never yet responded.

The new premises on Phillips Square had a store on the ground floor, which was leased, the college only requiring the upper floors. Dr. Gardner tells us that one of the tenants of the store was a little Englishman named Baker, who kept a second-hand book shop; business was not brisk, the College could collect no rent. They took legal steps to collect, but he came back with a counter-claim that, as the cockroaches had eaten his books, the College owed him, instead of him owing the College, and in proof of his assertion he showed a lot of cockroach

traps he had constructed, filled to the top with dead cockroaches. The College compromised with him by accepting three pieces of antique furniture, which they disposed of to the incoming tenants, Jenkins, the antique dealers. The plague of cockroaches was due to the fact that the building had been used as a bakery before it was occupied by the College.

As the College had no power to grant a degree, and the Doctorate was not to be had at that time from Laval or McGill, steps were taken to unite with the Dental Department of Bishop's University, which at that time had a Medical School in Montreal. This was consummated in 1895, and was continued until the Bishop's Medical School went out of existence. Dr. Beers was Dean of the College from the time of its formation until October, 1896. Dr. Bourdon was acting Dean until July, 1897, and Dr. S. Globensky Dean from that time until the formation of Laval Dental School.

In May, 1898, the College moved to larger quarters on the North West corner of St. Lawrence and St. Catherine Streets, remaining there until May, 1904, when it was found necessary to obtain still better quarters. These were found in the new "La Patrie" building.

In December, 1910, Bishop's Medical Faculty going out of existence, the Dental Infirmary which had been located in the "La Patrie" building was given up, Laval Dental School opening their own Dental Clinic, and a Clinic for the English-speaking students being opened in the General Hospital.

The Laval Dental School was formed in 1904, Messrs. J. Nolin, J. G. A. Gendreau and E. Dubeau being the first Professors.

In 1904 the name of Dental Association of the Province of Quebec was changed to College of Dental Surgeons of the Province of Quebec, the Board of Examiners becoming the Board of Governors.

Our historical sketch would not be complete without mentioning the Dominion Dental Council. The Dominion Dental Council is composed of representatives from those provinces who wish to have a common standard of proficiency in dental qualifications for the whole Dominion, so that the holder of a D.D.C. certificate is free to practise in all the reciprocating provinces. The Council was formed in Montreal, seventeen years ago, at the first meeting of the Canadian Dental Association. All the provinces of the Dominion have joined the Council except the Province of Quebec. When Quebec joins, as I feel sure she will very shortly, a common standard can be adopted for the dental profession of Canada and incorporation will naturally follow. This will strengthen our professional status immediately, and give to the Provincial Boards much needed prestige before the courts in grappling with the evils caused by the deceptions practised by quacks and charlatans throughout the

country. When we come to know our confreres of the sister provinces better, we shall wonder why we were so long in taking the final step towards union. What those of our number who vote against union are afraid of is, to some of us, an insoluble enigma. Surely nothing but good will come from getting together for the advancement of our profession and the better service of humanity.

When the Great War convulsed the world, the dentists in Quebec, in common with those of the whole Dominion, volunteered to serve their country in any capacity. To Sir Sam Hughes the profession owes a debt of gratitude for the promptness with which he established the Canadian Army Dental Corps. Although the Corps was an innovation, and had to contend against prejudice in some quarters where help might have been expected, its value to the troops was at once recognized by the military commanders in the field; it remains for those who stayed at home to see that their services are adequately recognized.

A FEW DENTAL NOTES OF INTEREST:

Dr. A. Bernard was Mayor of Montreal in 1873.

Dr. L. H. Samuels, Victoria Rifles of Canada, was killed in small-pox riots, Montreal, October 3, 1885.

Dr. Wells, of Huntingdon, Que., was amongst those who went to the Klondike gold rush in 1899.

"The Rôle of Sepsis and of Antisepsis in Medicine."—A lecture delivered at the opening of the session of the Faculty of Medicine in McGill University, Montreal, on October 3, 1910, by William Hunter, M.D., Edin., and published in *Lancet*, January 14, 1911. This lecture was the tangible beginning and the greatest impetus in the crusade for modern aseptic dentistry.

Dr. F. M. Wells, with Zilva, published, in 1919, some researches in diet at the Lister Institute in London.

LA TE patients offer a great problem because the dentist promises the patient too much. Can you foretell that a patient's jaws will not shrink? The natural anatomical condition is that every jaw shrinks when teeth are extracted and keeps on shrinking till death, so inform your patient that plates that fit to-day need readjustments from year to year in most cases to fit accurately. Charge them for such services because gratis work is unappreciated in the first place, and if you do the work gratis it is an admission on your part of faulty work in their minds.—Fred F. Schartz, D.D.S., in *Dental Student*.

The Construction of Pontics

FRANCIS VEDDER, B.S., D.D.S., ANN ARBOR, MICH.



PROBABLY no other phase of dentistry, with the possible exception of the pulpless tooth, has been the subject of as many vicious attacks as fixed bridgework. It has been assailed from all angles, from the fact that it usually requires the destruction of some tooth tissue, to the fact that in many cases it is insanitary. There is no doubt that many of these attacks have been justified, but unfortunately, many have been made by men with the ulterior motive of discrediting fixed bridgework in order to call attention to some scheme of their own for the replacement of missing teeth that they wished to "sell" to the profession. It is not my purpose, however, to write a defence of the entire field of fixed bridgework. I feel that any fair-minded individual who has followed the development of vital attachments in the past ten years will be convinced, from the abundant clinical evidence available, that the continued use of this method of replacing lost teeth is justified. True, there have been many failures, but failures due to faulty design, poor construction, and too frequently a complete disregard of principles that are in themselves sound.

The particular feature of fixed bridgework that I wish to treat in this discussion is the construction of the pontics. The pontic, or dummy, as it is frequently called, is that portion of a dental bridge that supplies the missing natural tooth or teeth, and in fixed bridgework is attached rigidly to the remaining natural teeth by means of crowns or inlays of some type. The pontics are really the superstructure of the bridge, while the teeth to which they are attached, called the abutments, are the foundation. Goslee sums up the basic requirements of pontics as follows: "First they must restore function; second, they must be of such form and shape as to insure sanitation; and third, they must meet all the demands of esthetics."

The restoration of function is perhaps the most important requirement of a bridge, although from the patient's standpoint it is frequently secondary to restoration of esthetics. By restoration of function, we must include not only masticatory function, but also the protection and preservation of the foundation and supporting tissues, the maintenance of the natural shape of the arch, which so greatly influences the facial contours and the restoration of proper speech.

From a strictly theoretical standpoint, the occlusal surface of a pontic should be the exact duplicate of the missing tooth or teeth which it replaces. The exact duplication of the occlusal surface of the natural tooth, however, is frequently not only impossible but in some instances

undesirable, even if possible. In many cases where fixed bridges are indicated the abutment teeth have drifted to such an extent that the space between the abutments is much shorter than the space that was occupied by the natural teeth. In these cases it is impossible to duplicate exactly in the pontic the occlusal relationship that existed before the extraction of the teeth, and the best that can be done is an approximate reproduction. In cases where a bridge is replaced immediately following extraction, especially in young individuals, it is undesirable to carve the cusps of the pontic as high or the sulcus and grooves as deep as those of the natural tooth which the pontic is replacing. The interdigitation of the cusps of the upper and lower teeth will, with the lateral movements of the mandible, cause too great strain on the pontic, and frequently too great movement of the abutment teeth. It should be borne in mind that there is a partial immobilization of the abutment teeth whenever a fixed bridge is placed. I say "partial" immobilization; it is more a restriction of movement than an immobilization, and I may say here that I do not believe this restriction of movement of the abutments that takes place in short span bridges is injurious to the supporting tissues. What is injurious to these tissues is that too often the cusps of the pontics are so formed that there is an actual locking with the cusps of the opposing tooth in such manner that the entire bridge is carried too far with the lateral movements of the mandible, which will eventually cause a breaking down of the tissues supporting the abutments.

Another feature of the occlusal curvings of pontics that is too often overlooked is the provision for ample spillways. In normal occlusion the buccal cusps of the lower molars and bicuspid, and the lingual cusps of the upper cuspids and molars, strike into the sulci of the lowers. In mastication the effect of this interdigitation of cusps is similar to that of a series of cones being driven into a series of conical depressions. Now if these depressions are filled with fibrous food, there would be tremendous resistance offered to the cones in closing of the jaws. In the natural tooth, however, the depressions, while being somewhat conical in shape, are provided with openings or grooves which extend from the base almost to the apex through which the impounded food after being partially crushed, can escape, thus relieving the pressure which would inevitably ensue were it not for this opening or spillway.

Many operators either do not understand or do not take into account the function of these spillways, and as a consequence their restorations take a great deal more stress in mastication than that to which they should be subjected. It has been my contention that these "spillways" should be more pronounced in a pontic than in the restoration of the occlusal surface of a single tooth, as we wish to place the minimum load on the pontic that is consistent with a fair degree of efficiency in mastication.

There has been a good deal of discussion in regard to the bucco-

lingual dimensions of the pontics. Some feel that to make the pontic smaller bucco-lingually than the natural tooth which it replaces will somewhat lessen the stress which the abutments will carry. Others feel that a diminution of the bucco-lingual dimension will impair the efficiency of the pontic as a masticatory unit. Personally, I do not believe that up to certain limits the bucco-lingual dimension of the pontic will have any marked effect either upon the stress carried, or upon masticatory efficiency. It has, however, a very definite bearing upon the protection of the underlying tissues which I shall discuss a little later.

Briefly summarizing the requirements for the restoration of mastication, we may say that the occlusal surface of the pontic should simulate as nearly as possible, the occlusal surfaces of the tooth which it replaces if the matter of movement as regards too strict interdigitation of cusps and the matter of stress as regards the provision of ample spillways, is given careful consideration.

The protection and preservation of the supporting and investing membranes of the teeth is an important function of a dental bridge. If the bridge is so constructed that these tissues are subjected to injury, either from incorrect passage of food, or from parts of the bridge itself, the entire structure is doomed to failure, because the abutments cannot stand unless their supporting tissues are maintained in a normal and healthy condition. We are taught that the more highly specialized a tissue becomes, the more susceptible it is to injury, and the more difficult to repair. The periodontal membrane is a highly specialized tissue, and according to some histologists, it is more highly specialized about the gingival third of a tooth than about the apical portion. If this be true then we would expect the gingival portion of the membrane to be highly susceptible to injury, and it is this portion that must be protected. We have learned by clinical experience that any abnormal pressure on this membrane, either constant or intermittent, will cause it to undergo pathological change. The constant pressure may be caused either by an overhanging margin of a filling, a pontic fitted too closely to the cervical of an abutment, or by leaving a space into which food is packed and allowed to remain. The intermittent pressures are usually caused by improperly shaped pontics or attachments that do not deflect the food away from the cervicals during mastication. The pontics must be so shaped and so attached that these pressures will not exist.

The preservation of a normal interproximal space and embrasure between the abutment and the pontic is one of the most important features of bridge construction, and one which is too frequently disregarded. I spoke before of the bucco-lingual dimension of the occlusal surface of pontics. I do not believe that the correct embrasure can be obtained unless that surface is practically as wide as the occlusal surface of the

tooth which it replaces, and I believe that the pontic and the attachment should be fastened with the minimum amount of solder consistent with strength and service, and that the soldered joint should be as near the normal contact point and should cover as small an area as possible. In extremely short cases, slots may be cut in the marginal ridges of both pontic and attachment into which a short length of iridio-platinum wire may be fitted and soldered, eliminating a bulk of solder in the interproximal area. If the bridge is so constructed that normal interproximal spaces and embrasures are maintained, the periodontal tissues will receive sufficient protection and sufficient stimulation to keep them in a healthy condition.

Little need be said about the preservation of the arch and facial contour. In general, bridges should be placed as soon after extraction as possible to prevent drifting of the teeth, and opening of contacts. This is a condition that varies greatly not only among individuals, but also in different positions of the mouth of the same individual. Due to their greater anchorage, the multi-rooted teeth are usually slower in their movement than single-rooted teeth, although I think we have all noted the rapidity of movement even in the molar region in some cases. Quite frequently we find that a removable bridge that has not been worn, even for a day or two, will not go to place easily because of the movement of the abutment teeth.

The matter of comparative cleanliness between fixed bridges and removable structures is one that has received a great deal of attention, and a great deal might be written on the subject. Suffice it to say here, that the matter of cleanliness in fixed bridgework is largely dependent upon the shape of the pontics, the manner in which they are fitted to the soft tissues, and the manner in which they are attached to the abutments, together, of course, with the care the patient gives the appliance. Unfortunately, many fixed bridges are positively filthy. This may or may not be the patient's fault; in many cases it is ignorance or negligence on the part of the patient. In other cases it is due to faulty design or poor construction, so that no matter what attempt the patient may make to keep the bridge clean, it remains in an insanitary condition. Perhaps the most frequent faults in design that render a bridge impossible of cleansing are those cases in which the pontics are concave on the lingual surface and lap, or even worse those that actually saddle the ridge, in such a way that food debris is constantly held between the pontic and the gum tissue, so that no amount of brushing by the patient will remove this debris; not only that, but it cannot be removed with floss, due to the fact that floss cannot be passed over concave surfaces in such a way that it is in actual contact with all of the surface. This fault can usually be remedied by making the lingual surfaces of the pontics convex, so that

floss looped over the pontic and passed mesio-distally between the pontic and the soft tissues will, in passing, be in contact with all parts of the lingual surface and cleanse it as the floss is drawn from mesial to distal and from distal to mesial.

Another common error made in fixed bridges is that of setting the upper border of the pontic in maxillary cases, so far away from the soft tissues that a ledge is formed. This ledge I have facetiously termed the "pantry shelf," because it usually is the resting place for some sort of food. These ridges are not only insanitary, but from an esthetic standpoint, are bad. I grant that occasionally they are caused by resorption of the soft tissues, but usually they are the result of mistakes in assembling the bridge.

In the last few years, we have been hearing a good deal about porcelain tipped pontics. The porcelain tipped pontic is not a new thing, but an old thing revived. Personally I am in favor of using porcelain tips in all cases where their application can be made without sacrificing strength, and without crowding the interproximal spaces and the embrasures. There is some doubt as to whether fused porcelain is really more cleanly than highly polished gold. I am inclined to believe that a highly glazed porcelain surface will remain cleaner in the mouth than a highly-polished gold one. For one thing, the porcelain does not oxidize, and food debris does not seem to cling to it as it does to gold. Of course, we must admit that food debris on a gold surface is more apparent than on porcelain, and we may be misled by this fact. It seems, however, that the soft tissues take more kindly to porcelain where it is in contact with them than they do to gold.

The greatest danger in the use of partial porcelain pontics lies in their misapplication. There are many short bite cases where the use of a sufficient bulk of porcelain to prevent its dislodgment will seriously impair the strength of the gold framework of the bridge. There are other cases in which the pontic is so small that to obtain a sufficient bulk of porcelain will mean a sacrifice of the interproximal space. I do not believe that in the bicuspid and molar region porcelain tipped pontics should be placed in the sockets of recently extracted teeth. I cannot see that there is anything to be gained by this procedure, and in some cases it may result in actual injury by preventing the filling in of the sockets. In the case of the upper six anteriors, it is sometimes an advantage to use a porcelain tip that extends slightly into the socket of a recently extracted tooth. This is especially true if the bridge must be placed immediately following the extraction. In recently extracted cases it is frequently difficult to set an ordinary facing in such a way that it will not be unsightly when resorption has taken place, and if the porcelain tip is not too long, the appearance after resorption is usually considerably better.

The restoration of esthetics is, from the patient's standpoint, especially in anterior cases, the principal function of a bridge. Patients will frequently go for a long period of years, with a missing molar,—in fact, they may never think of having it restored; but the mere mention of the loss of a central, lateral, or cuspid, will immediately precipitate a talk with the dentist on the possibility of some sort of restoration.

Art in bridgework is that which conceals artificiality. The time is past when any shape or mold of porcelain tooth in the anterior part of the mouth would satisfy the patient. To-day patients demand that an anterior bridge looks as well, or even better, than their own teeth did, and the demand is one that often puts severe strain upon the resourcefulness of the dentist. Fortunately there are on the market to-day tooth forms and shades that, if used skilfully, defy detection by the laity at conversational distance. It is somewhat difficult to make general statements in regard to the meeting of esthetic demands in the construction of pontics, because there are such wide variations in individual cases. There are a few pitfalls, however, that may usually be avoided. In general, a single wide facing is preferable to two very small ones. That is, teeth that are smaller, or rather that are narrower, than the remaining natural teeth, are more conspicuous than those slightly wider, just as shades slightly darker are less conspicuous than those lighter than the natural teeth. In arranging anterior facings, a slight irregularity of alignment will often prevent the hideous picket fence appearance that comes from setting facings in perfect anatomical position. With the large number of molds and sizes of facings on the market, it should seldom be necessary to grind the lateral sides. This destroys the form of the tooth and often produces a most artificial appearance that is accentuated by the lack of normally shaped interproximal spaces.

While I feel that restoration of esthetics is a very vital part of bridge work, I do not think that strength should ever be sacrificed for it, and unfortunately there are cases in which one or the other must be sacrificed to some extent.

In conclusion, I want to say that I firmly believe that with thought, careful diagnosis, and with a fair degree of skill, pontics for fixed bridges can be so constructed and so attached that they will restore function, they will remain as clean as the remaining natural teeth, and according to the artistic abilities of the operator, will meet the demands of esthetics.—*Michigan State Bulletin.*

“To speak wisely may not always be easy;
But not to speak ill requires only silence.”

Prosthetics in Triumvirate of Dental Services

JULIO ENDELMAN, M.S., D.D.S., F.A.C.D.



AMONG the various specialties of the healing art, dentistry enjoys a unique distinction in that, within the scope of the services which it is capable of rendering are included three important departments, viz., the preventive, the curative and the restorative. The restorative is the phase of dentistry which is to engross our attention at this time, when here and there we read with regret the views of those who would divest dentistry of this important division of its work on the strength that it could be carried out just as well by men trained in the laboratory as dental mechanics. Dentistry is the only profession or specialty which, by virtue of the training which its practitioners enjoy, assumes the responsibility for the replacement of lost dental organs by means of appliances constructed on the dual basis of physiologic and anatomic requirements. All other specialties have to depend on outside agencies for the resoration of lost organs by artificial substitutes, not because such substitutes present great technical difficulties, but simply because of a prejudice against procedures requiring digital skill and mechanical ingenuity. It is significant in this connection that the advocates of the relegation of prosthetic dentistry to subservient agencies are not, as a rule, those who, through personal effort and experience, have attained a position of prominence in the professional ranks as prosthetic specialists. Prosthetic dentistry of that type in which a small fraction of the work is done at the chair, and hastily in so many instances, and the remainder by men who have had no opportunity to study the anatomic and physiologic requirements which the substitute should possess, who have not been trained in the etiology and pathology of dental and oral disease and their complications, who have not been in a position to come in contact with a few of the thousands of dental wrecks throughout the country,—that is the type of mechanical dentistry which Hunter, some twenty-five years ago, referred to in his epoch-making essay on the etiology of pernicious anemia and other forms of blood insufficiencies. The dental profession must not relinquish any share of its responsibility in the fulfilment of its duties as conceived in the first few lines of this message. On the contrary, dentists and dental students should be encouraged to pursue with greater thoroughness than ever before the study of prosthetic dentistry in all of its phases; they should be made to appreciate the importance of following up every step in the construction of a plate, a crown or a bridge, and, finally, they should come to realize that the time spent in the laboratory in engineering and building a dental substitute which actually fulfills anatomic, physiologic and cosmetic requirements is time at least as well spent as is that consumed in the performance of any dental operation.

Whenever we hear comments of a disparaging nature concerning the functions of prosthetic dentistry and its important position in the triumvi-

ate of dental service, such as the desire to eliminate it, a portion of it at least, from the sphere of services performed by the dentist himself, we are constrained to think that in certain quarters a very limited interpretation has been given to the far-reaching, health-giving possibilities of prosthetics, and further, that the misapplication and lack of understanding of the principles of prosthetics, with its serious pathologic complications, has not been sufficiently emphasized.

Neglect of Teeth Important Cause of Ill Health

INVESTIGATIONS which have been carried out in different parts of the country, in recent years, have shown that the teeth of children are neglected to such an extent that it is the exception to find children with sound teeth. It has been clearly shown that this neglect is responsible for a great deal of sickness and physical disability in later life.

In large groups of children examined by competent authorities, as high as 96.5 per cent. have been found to have defective teeth. Among groups of high school children more than 13 per cent. of the first molars have been found missing. As the first permanent molars are the most important teeth, serving not only as a keystone to the dental arch, but also as the most efficient grinders of food, their loss results in serious damage to the remainder of the teeth and to the soft tissues of the mouth.

Very little has been done as yet in an organized effort to control such a serious condition. Dental clinics are doing excellent work in providing treatment for deserving children of school age, but in all too many cases the teeth are found to have been neglected for a long period before the admission of these children to school. There is as yet little appreciation of the important part played by the teeth in the maintenance of good health. Neglect of the baby teeth results not only in many cases of children's ailments, but more important still, seriously handicaps the permanent teeth.

The need for education in mouth hygiene was never more evident than it is to-day. Such educational work must begin with the expectant mother. Her food should contain a large percentage of lime salts, both before and after the birth of the child. The teeth as they make their appearance should be kept scrupulously clean, and parents should be taught the importance of having cavities filled as soon as they appear.

School children should have regular tooth brush drills, and regular mouth inspection and treatment should be required, and, when found necessary, provided. Children and adults alike should visit their dentist at least once each year, preferably every six months—in order to prevent the beginning of trouble. In this, as in all other health matters, the ounce of prevention weighs many times more than the pound of cure.—*The Canadian Red Cross.*

Educational Talk by Radio*

F. E. WARRINER, D.D.S., WINNIPEG, MAN.



HISTORY is interesting—all history is interesting; whether it be the story of our forefathers settling this country, and their early struggles, or the tales of ancient Greece, or the rise and fall of the Roman Empire, each can command our attention and usurp our imagination.

The story of the pioneer, in whatever walk of life, holds our interest and fancy, because we know he has faced new and unknown experiences and difficulties, and has triumphed over them. His was a new field, uncharted and unmapped.

To-night as we gaze into the earliest records of dentistry we find our attention focused on Egypt, that country so rich in prehistoric treasures; a country with a past—so great in knowledge, power and wisdom that we naturally wonder if, with all our great inventions, and wonderful civilized development, we are equal to them.

Are we not all prone to think of ourselves as being especially fortunate for having been born in the 20th Century, and have we not a tendency to pity those born centuries ago?

There were learned men practising medicine and dentistry in the time of the Pharaohs. Gold has been found in the teeth of mummies. Gold crowns were worn; bridge work was not unknown, and single artificial teeth were inserted in the place of those newly extracted. Medical books were numerous in Egypt, containing instructions for treating maladies of the stomach, heart, etc., wounds of the hands and toes, etc., and everywhere we find the instructions interspersed with prayers and incantations.

Diseases they thought were caused by the anger of a god, or by the presence in the suffering limbs of one or more evil beings, such as ghouls, vampires, or spirits of the dead.

Remedies could cure or mitigate the outward ills, but disease itself could not be cured as long as the evil spirit remained; only incantations could expel it, and the doctor would have been of little use to his patients if he had not proved as expert in exorcisms as in formulae in pharmacy.

There are also evidences that the Hindus attempted to replace lost teeth by attaching wood or ivory substitutes to adjacent sound teeth by strings or wires. As a distinct vocation dentistry is first alluded to by Herodotus, 500 B.C.

The impetus given to medical study in Grecian schools, 500-400 B.C., developed among the practitioners of medicine and surgery considerable knowledge of dentistry.

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The next record we find concerning dentistry is in A.D. 131, when one, Galen, taught that the teeth were true bones existing before birth, and to him is credited the belief that the upper cuspid teeth receive branches from the nerve which supplies the eye and hence should be called eye-teeth. While not being correct, he no doubt arrived at his conclusion from the fact that the same nerve supplies the tissue around and about the eye, and the pain would be felt in the temples as well as in the cuspids.

Albucasis (A.D. 1006) describes the operation by which artificial crowns are attached to adjacent sound teeth.

From 1728 to 1793, we find John Hunter is credited with extensively practising the operation of transplanting teeth. There is no mention of any anæsthetics being used for those various operations, but they must have had some method for alleviating pain. In a work published by Meisner in 1782, he mentions the case of Augustine, King of Poland, undergoing an amputation while rendered insensible by a narcotic.

Shakespeare makes frequent mention of anæsthetic draughts, the composition of which is not specified.

Mandragora was extensively used as an anæsthetic by Hugo de Lucca, who practised in the 13th Century. In an old Chinese manuscript, laid before the French Academy, appears the name of Hoa-Tho, who lived in the 3rd Century, and who gave his patients a preparation of hemp whereby they were rendered insensible during the performance of surgical operations. So we see some attempt was made centuries ago to reduce pain, but to what extent it was successful must be left to our imagination.

The early contributions of France exerted a controlling influence upon the development of dental practice.

The researches of Urbain He'mard, published in 1582, describe the anatomy of the teeth, their nature and properties.

In 1728 Fauchard, who has been called the father of modern dentistry, published a book on dental science. In the preface he laments the fact that the most celebrated surgeons of that time had neglected and abandoned this branch of surgery.

After the publication of Fauchard's work the practice of dentistry became more specialized and distinctly separated from medical practice, the best exponents of the art being trained as apprentices by practitioners of ability who had acquired their training in the same way from their predecessors. Fauchard also suggested the use of porcelain as an improvement upon bone and ivory for the manufacture of artificial teeth.

The first book on the anatomy of the teeth was written by Dr. Blake, in 1801, and was distinctly in advance of anything previously written on dentistry. Until the later part of the 18th Century extraction was practically the only operation for the cure of tooth-ache.

In Great Britain the 19th Century brought the dawn of dental science. One writer says the reason for Britain being so many years behind France and the rest of Europe in dentistry was due to the fact that dentistry was not required in Great Britain until after they had adopted European diet. With the knowledge we have to-day of our bodies, and the various effects of food on same, we can readily conceive this to be true. To return to dentistry in England we find Joseph Fox one of the first, if not the first member of the medical profession to devote himself exclusively to dentistry, and his work is considered a repository of the best practice of his time.

About 1839 the sympathetic nervous relationships of the teeth with other parts of the body, and the intersection of diseases of the teeth with general pathological conditions, were clearly established. Thus a scientific foundation was laid, and dentistry came to be practised as a specialty of medicine.

Turning our attention now to America, we find dentists began to arrive from England and France about the time of the Revolution.

Among these were John Woffendale (1766), a student of Robert Berdmore, of Liverpool, who was the surgeon-dentist to H.M. King George III.

During the winter of 1781-82, while the continental army was in winter quarters at Providence, R.I., Lemaire, a French dentist, found time and opportunity to practise his calling, and also to instruct one or two persons, notably Josiah Flagg, probably the first American dentist.

Dental practice was thus established upon American sod, where it has produced such fertile results.

In 1837 a local association of dentists was formed in New York.

In 1840 a national association was formed, *The American Society of Dental Surgeons*, the object of which was to advance the science of free communication and interchange of sentiments.

The first dental periodical in the world, *The American Journal of Dental Science*, was issued in June, 1839. In 1840 was established the Baltimore College of Dental Surgery, the first college in the world for the systematic education of dentists.

Historians refer to dentistry as one of the lost arts, and well might they do so, for as we travel back into the past we pass through familiar scenes for some fifty years, when we reach a period which saw the discovery of vulcanite and its application to dentistry—an epoch-making discovery which revolutionized the mechanical side in a way we moderns cannot realize.

On the surgical side we pass very soon out of the region of anæsthetics, local and general, to the time when antiseptics were unknown, and we who know what the beneficent effect is wonder why there were not more

casualties and deaths as a result of the operations performed with the early forceps, the key and the pelican.

Perhaps the high mortality ascribed to "teeth" as the cause of death in the statistics of a century ago may be accounted for in this manner.

In conclusion, we wish again to remind you that the early Saxons had jaws well-formed and teeth with little or no caries, and it is interesting to compare this with what we know of their diet. We learn that they had no sugar, and that starchy foods were unknown.

Herein is much food for satisfaction for the protagonists, both of the Sim Wallace theory of the prevention of dental caries and the disciples of the vitamin theory also.

And so we learn that the closer the human family approaches the natural methods of life, and the teeth are made to perform their natural functions, the more often do we find a better structure and better arrangement of dental organs.

1926 Meeting—Eastern Ontario Dental Association

HE next meeting of the Eastern Ontario Dental Association will be held at Stanley Island, Cornwall, on June 23rd, 24th and 25th, 1926.

The programme and local committees are planning for an excellent meeting this year, and it is expected that a large number of dentists will be present.

The subjects of Focal Infection, Periodontia for the General Practitioner, Exodontia (with special reference to Impactions and Difficult Cases), and Full Denture Prosthesis, will be given special attention.

The essayists will include such well-known members of the profession as Doctors A. E. Webster, Alvin Snell, D. W. Coupland and F. A. French. Among those who will open the discussions on essays are Doctors R. J. Reade, J. S. Girvin, W. H. Woodrow, and W. Allan Armstrong. Doctors F. J. Conboy, Director of Dental Services, Department of Health, Province of Ontario, and Wallace Seccombe, Dean of the Faculty of Dentistry of the University of Toronto, will also be present.

Further announcements will be made later.

Human judgment is finite, and it ought always to be charitable.—
William Winter.

Seventh International Dental Congress



THE Seventh International Dental Congress will be held in Philadelphia, from August 23rd to 27th, 1926. Members of the dental profession from all over the world will assemble at the Congress.

Reduced rates of fare to Philadelphia from all parts of the world are being offered by the steamship companies, railways, tourist agencies, etc., during the summer of 1926. In England, France, Germany, Austria, Italy, Switzerland, Scandinavia, special parties of delegates to the Congress are being formed, and in several instances large parties are chartering steamer accommodations and arranging itineraries of travel to the United States.

The International Dental Congress has, through the American Express Company, arranged for the chartering of an entire steamer, and for an itinerary of travel in the United States for the party which will sail on this steamer. Delegates can be members of this party at a nominal cost. The itinerary, of course, includes attendance at the Congress. The steamer, the *Noordam*, 22,000 tons, sails from Rotterdam on August 10th, and calls at Boulogne and Southampton to take aboard other delegates, arriving at New York on August 20th. The party remains one day in New York, sightseeing, and arrives in Philadelphia in time for the opening of the Congress on August 23rd.

Following the Congress, this party makes a tour of one of the most interesting parts of America, visiting seven of the largest cities in the United States. These are New York, Philadelphia, Washington, Pittsburgh, Detroit, Chicago, and Boston. Tourist directors will accompany the party, and sightseeing trips will be made in each city, including a visit to the famous Niagara Falls, and visits to the endowed Eastman Dental Dispensary at Rochester, N.Y., and the similar one, the Forsythe Dispensary in Boston. After sixteen days in America, the party will sail on the *Noordam* on September 4th, from New York. Enrolment for this tour can be made by application to the American Express Company, which has offices in all the large cities in the world.

Another large party of delegates will sail from Hamburg on the S.S. *Cleveland*, of the Hamburg-American Line, on August 5th, arriving in New York, August 16th. This party, composed mostly of dentists from Central and Northern Europe, has an extensive itinerary of travel in America before sailing home on the same vessel.

The dental profession of America is arranging to welcome its fellow practitioners from abroad and to extend to them the utmost hospitality.

There will be present at the Congress from fifteen to twenty thousand dentists, including the most eminent men and women in the science and practice of dentistry. Arrangements are being made to comfortably house everyone. Dental associations, clubs, federations, etc., in various cities are arranging hospitality to foreign delegates who visit their cities before or after the Congress.

In Philadelphia, during the week preceding the convening of the Dental Congress, the Philadelphia Clinic Club is arranging a programme of clinics for the foreign delegates. These clinics will include operative dentistry, orthodontia, exodontia, root canal therapy, porcelain technique, crown and bridge work. In addition, there will be continuous demonstrative clinics on full and partial denture construction every evening during the week preceding the Congress.

The Dental Congress will be held at the same time as an International Exposition of the arts, sciences, education, social and commercial progress is being held in Philadelphia.

The summer of 1926 will be filled with historic pageantry, large public gatherings and other assemblages in Philadelphia. His Excellency, the President of the United States, Mr. Calvin Coolidge, will attend a number of these ceremonies, and it is probable that he will officially open the International Dental Congress.

The dentists attending the Congress, who will of themselves be a cosmopolitan gathering, will be among a multitude assembled from all parts of the globe to attend the Sesqui-Centennial Exposition. This Exposition will be housed in many buildings, of vast acreage, in a location within the city and ten-minutes' ride from the city's centre.

The Dental Congress will have its own exposition features. There will be shown, in immediate conjunction with the sessions of the Congress, a dental scientific exhibition. There will be a dental public education and health exhibit, and also a dental historical exhibition. A commercial exhibition will show the largest developments in the mechanical side of the profession. 16,000 square feet of space in the Commercial Museum, in which the Congress will assemble, will be devoted to these exhibitions.

The marvellous advance in oral hygiene and oral surgery in which the dental profession has participated, and has, in fact, led, will be an important theme in the deliberations of the Congress.

Arrangements have been made by the International Congress management that delegates will make inquiries regarding hotel and other accommodations direct to the hotels in Philadelphia. Lists of these hotels are as follows, and all who plan to attend the Congress should make hotel reservations at once:

Hotel.	Capacity persons.	Rate per room per day.
Bellevue-Stratford, S.W. Cor. Broad and Walnut Sts.	800 to 1000	\$4.00 to \$8.00
Ritz-Carlton, S.E. Cor. Broad and Walnut Sts.	150	7.50
Walton, Broad and Locust Sts.	400	4.00 to 6.00
Stenton, Broad and Spruce Sts.	50	5.00
The Spruce, 13th and Spruce Sts.	200	4.00 to 6.00
Sylvania, Locust and Juniper Sts.	400 to 500	5.00 to 6.00
Vendig, 13th and Filbert Sts.	300	3.50 to 4.00
Windsor, 1219-29 Filbert St.	200 to 300	4.00 to 5.00
Hanover, N.W. Cor. 12th and Arch Sts.	200 to 300	4.00 to 5.00
Adelphia, 13th and Chestnut Sts. (all rooms with bath)	600	4.00 to 5.00
St. James, 13th and Walnut Sts.	300 to 400	4.00
Aldine, 19th and Chestnut Sts.	100	4.00 to 5.00
Elk Club, Broad and Wood Sts. (men only)	100	4.00
Lorraine, Broad St. and Fairmount Ave.	250	3.00 to 6.00
Majestic, Broad St. and Girard Ave.	200	3.00 to 6.00
Pennsylvania, 39th and Chestnut Sts.	400	2.50 to 3.00
Green Hill Farms, City Line and Lancaster Pike	40 to 50	5.00 to 6.00
Bartram, 33rd and Chestnut Sts.	250	3.00
Robert Morris, 17th and Arch Sts.	250	3.50 to 4.00
Belgravia, 1801 Chestnut St.	70	3.50 to 9.00
Clinton Apts., 10th St., below Spruce St.	100	4.00 to 5.00
Strathmore, 12th and Walnut Sts.	90	2.50 to 3.00
Marlyn Apts., 40th and Walnut Sts.	20	4.00 to 5.00
Washington, 7th and Dauphin Sts.	300	3.50
Penn Athletic Club, 18th St. and Rittenhouse Square (men only)	150	3.50 to 4.50
Girard Craftsmen Club, 2027 Chestnut St. (men only)	25	5.00 to 9.00
Y.M.C.A., 1425 Arch St. (men only)	50 to 100	1.50 to 2.50
Y.W.C.A., 18th and Arch Sts. (women only)	25	1.00 to 1.50
Walt Whitman, Broadway and Cooper St., Camden, N.J.	100	3.50 to 4.00
Philadelphia Young Friends' Association, Inc., Fif- teenth and Cherry Sts.	20	4.00 to 4.50

Troubles Develop You



WHEN the bright sun goes down and the black night comes in, it is then that the moon and the eternal stars come out.

The next time a flock of troubles fly over your head and darken your day, remember the stars, recall the moon and think of the sun, all in place and all in the right place.

Troubles are simple tests, they massage a man.

The small man is daily ducking troubles; the big man challenges troubles with confidence, and it is this confidence which wins him a championship.

Small type tires the eyes and small troubles disturb us most. The little things are the most annoying. Take fleas for illustration.

We get all excited over some small petty vexation; then we miss, in our excitement, the big chance.

Most of our troubles are so small that we forget them as soon as we see a man who is actually experiencing real adversity.

Troubles serve to instruct us. Too much prosperity deceives us. Prosperity has destroyed thousands, while adversity has wounded but a few.

Out of trouble, misery and distress the fairest examples of achievement have been born.—*Silent Partner.*

The Dentistry Act, 1926, Province of Ontario

[Numerous changes in the *Dentistry Act, Province of Ontario*, were occasioned because of the transfer of the School of Dentistry of the Royal College of Dental Surgeons to the University of Toronto. The detailed conditions of transfer have been incorporated in a schedule included in the amended *University Act, 1926*.

The new *Dentistry Act* is published in full herewith, and stands as a worthy contribution to improved status and an official recognition of dentistry as a learned profession whose object is public service through the furtherance of the health of the people. The new *Act* deals with the practice of dentistry in the Province of Ontario, and references to the School of Dentistry of the R.C.D.S. have been deleted, since the School is now part of the University of Toronto.]

IS MAJESTY, by and with the advice and consent of the Legislative Assembly of the Province of Ontario, enacts as follows:—

1.—This Act may be cited as *The Dentistry Act, 1926*.

ROYAL COLLEGE OF DENTAL SURGEONS OF ONTARIO.

2.—The Royal College of Dental Surgeons of Ontario, hereinafter called “the College,” is continued, and every person who holds a valid and unforfeited certificate of license to practise dentistry granted to him by such College shall be a member of the corporation. R.S.O. 1914, c. 163, s. 2.

3.—(1) The College may purchase, take and possess for the purposes of the College, but for no other purpose, and, after acquiring the same, may sell, mortgage, lease or dispose of any real estate. R.S.O. 1914, c. 163, s. 3 (1).

(2) Such real estate shall not be sold, mortgaged, leased or disposed of, except with the consent of the Board of Directors, given at a meeting duly called for that purpose and with the consent of the Minister of Education. R.S.O. 1914, c. 163, s. 3 (2); 1920, c. 46, s. 2.

(3) Notice of such meeting shall be given to every member of the Board by letter mailed to his last registered address, seven days before the day appointed for such meeting, stating the object thereof. R.S.O. 1914, c. 163, s. 3 (3).

BOARD OF DIRECTORS.

4.—(1) There shall continue to be a Board of Directors of the College, hereinafter called “the Board.”

(2) The Board shall consist of nine elected members, each of whom shall be a member of the College and shall hold office for two years, and the Minister of Education for the Province of Ontario, who shall be *ex officio* a member of the Board.

(3) The presence of at least five of the elected members of the Board shall be necessary to constitute a quorum.

(4) One member shall be elected for each electoral district mentioned in Schedule "A" by the members of the College resident in such district, and every person so elected shall be a resident of the electoral district for which he is elected and no person shall be eligible for election as a representative of an electoral district who is a member of any dental faculty and in receipt of salary or other remuneration for his services thereon.

(5) One member shall be elected by and from the Faculty of Dentistry of the University of Toronto.

(6) A member of the Board may at any time resign his office by giving notice of his resignation in writing to the Secretary, and in case of a vacancy occurring through resignation or otherwise:

(a) where the vacancy occurs in the representation of an electoral district more than two months prior to the holding of a general election, an election shall be held for the electoral district to fill the vacancy, and where the vacancy occurs not more than two months prior to the date of the general election, no person shall be elected or appointed to fill the vacancy;

(b) where the vacancy is in the representation of the Faculty of Dentistry, the remaining members of the Faculty shall elect a duly qualified person to fill the vacancy. *New.*

5. The Province of Ontario shall, for the purposes of this Act, be divided into the eight electoral districts described in Schedule "A." R.S.O. 1914, c. 163, s. 5. *Amended.*

6.—(1) An election of the Board shall be held on the second Wednesday of December in every second year, reckoning from the year 1912: and the present Board shall hold office until the first meeting of the new Board.

(2) No person shall be qualified to vote at such election if he is in arrear in respect of any fees payable by him.

(3) The votes at such election shall be given by closed voting papers, Form 1.

(4) The manner of holding such election with respect to notification of the electors of the time and place of holding the election, the nomination of candidates, the presiding officer thereat, the taking and counting of the votes, the giving of a casting vote in case of an equality of votes, and other necessary details shall be determined by by-law of the Board.

and in default of such by-law, may be prescribed by the Lieutenant-Governor in Council. R.S.O. 1914, c. 161, s. 6.

7.—(1) Every newly elected Board shall hold its first meeting in the City of Toronto on the first Monday in May, or at such other time as may be fixed by the retiring Board, and the members of the Board shall hold office until the first meeting of their successors.

(2) Other meetings shall be held at such time and place as the Board appoints. R.S.O. 1914, c. 163, s. 8 (1, 2).

(3) Special meetings may be called by the President at any time, and on the request in writing of four members of the Board he shall call a special meeting. R.S.O. 1914, c. 163, s. 8 (3). *Amended*.

OFFICERS OF BOARD.

8.—(1) Every Board shall at its first meeting elect a President, a Vice-President, and a Registrar, and shall appoint a Treasurer and a Secretary, and such other officers as the Board considers necessary.

(2) The Treasurer and the Secretary shall receive such remuneration for their services as the Board may fix.

(3) The Board shall, if the President and Vice-President are absent, elect one of its members to preside at its meeting, who, while so presiding, shall have the same powers and exercise the same functions as the President. R.S.O. 1914, c. 163, s. 9.

(4) The Board shall annually appoint from among its members not more than five persons who shall constitute an executive committee to take cognizance of and action upon all such matters as may be delegated to it, or as may require immediate action or attention between meetings of the Board, but no action taken by the executive committee shall be valid unless agreed to by at least three members of the committee nor after the next ensuing meeting of the Board unless approved by the Board at that meeting, and the executive committee shall not have power to alter, amend or suspend any by-law of the Board. *New*.

9. There shall be paid to the members of the Board such fees for attendances, and such reasonable travelling expenses, as may be fixed by by-law of the Board. R.S.O. 1914, c. 163, s. 10. *Amended*.

10.—(1) All moneys under the control of the Board shall be paid to the Treasurer, and shall be applied for the purpose of the College. R.S.O. 1914, c. 163, s. 11.

(2) The Board may out of any funds in its hands from time to time make grants,—

(a) for post graduate courses and kindred educational extension work;

(b) for scholarship, lectureship and research work; and

(c) in aid of any fund which has for its purpose investigation in the interest of dental, medical and surgical science; and

(d) in aid of any association or other body having for its object the protection of members of the college or the adjustment of claims against them for anything done in their professional capacity. *New.*

BY-LAWS OF BOARD.

11.—(1) The Board shall make such by-laws as it may deem necessary for the proper and better guidance, government, discipline and regulation of the Board, the College, the members of the College and the profession of dental surgery, and the carrying out of the provisions of this Act, and such by-laws shall be published for two consecutive weeks in the *Ontario Gazette*, and shall not take effect until so published.

(2) Such by-laws or any of them may be annulled by the Lieutenant-Governor in Council. R.S.O. 1914, c. 163, s. 17.

CERTIFICATES OF LICENSE.

12.—(1) The Board may appoint one or more examiners for the matriculation or preliminary examination of all students entering the profession, or may accept in lieu of such matriculation or preliminary examination evidence that a student has passed any other satisfactory examination. R.S.O. 1914, c. 163, s. 13 (1).

(2) Such examination shall be passed prior to being entered as a student of dentistry. R.S.O. 1914, c. 163, s. 13 (2). *Amended.*

13.—(1) The Board may prescribe a curriculum of studies to be pursued by students, and fix and determine the period for which every student shall be articulated and employed under a duly licensed practitioner, the examination necessary to be passed and the fees to be paid to the Treasurer before a certificate of license to practise dental surgery is issued.

(2) The Board may prescribe the conditions upon which dentists residing elsewhere than in Ontario, and students and graduates from other dental colleges may be admitted to membership in the College. R.S.O. 1914, c. 163, s. 14.

14. Subject to the approval of the Lieutenant-Governor in Council, the College may make arrangements with any university or college in Ontario for the use of any library, museum or property belonging to or under the control of such university or college, and may affiliate with any such university or college, and may enter into all arrangements necessary to that end upon such terms as may be agreed upon. R.S.O. 1914, c. 163, s. 15. *Amended.*

15.—(1) All persons, being British subjects by birth or naturalization, who were engaged on the 4th day of March, 1868, in the practice of the profession of dentistry, or who, not having been residents of On-

ario, had then had three years' experience in the practice of dentistry, shall be entitled to the certificate of "Licentiate of Dental Surgery," upon furnishing to the Board satisfactory proof of their having been so engaged, or having had such experience, passing the required examination and paying the prescribed fees.

(2) All persons, being British subjects by birth or naturalization, who were continuously engaged for five years and upwards in established office practice, next preceding the 4th day of March, 1868, in the practice of the profession of dentistry in Ontario shall, upon satisfactory proof thereof, and upon payment of the prescribed fees, be entitled to such certificate without passing any examination. R.S.O. 1914, c. 163, s. 18.

16.—(1) The Board, once at least in every year, shall cause to be held at a time fixed by the Board, an examination of the candidates for certificates and such titles as the Board has authority to grant.

(2) At every such examination the candidates shall be examined orally or in writing or otherwise, by examiners to be appointed for that purpose by the Board, in such subjects as the Board shall prescribe.

(3) The examiners shall receive such remuneration as may be fixed by the Board.

(4) Each examiner shall, if required, subscribe and take the following declaration:

"I solemnly declare that I will perform my duty of Examiner without fear, favour, affection or partiality towards any candidate, and that I will not knowingly allow to any candidate any advantage which is not equally allowed to all."

R.S.O. 1914, c. 163, s. 19.

(5) The Board may dispense with such examination in the case of any person who proves to the satisfaction of the Board that he has passed in any university or college an examination which the Board deems of equal value. *New.*

17.—(1) If the Board is satisfied by the examination that the candidate is duly qualified to practise the profession of dental surgery, and that he is a person of integrity and good moral character, it shall, subject to the by-laws, grant him a certificate of license and the title of "Licentiate of Dental Surgery," which certificate and title shall entitle him to all the rights and privileges conferred by this Act.

(2) The Board shall hold at least one meeting in each year in the City of Toronto for the purpose of granting such certificates and titles and for the transaction of such other business as may properly come before it. R.S.O. 1914, c. 163, s. 20.

18. Every certificate of license shall be sealed with the corporate seal of the College and signed by the President and Secretary of the Board; and the production of such certificate of license shall be *prima*

facie evidence in all courts and upon all proceedings of its execution and contents. R.S.O. 1914, c. 163, s. 21.

19. The Secretary of the Board shall, on or before the 15th day of January in each year, transmit to the Provincial Secretary a certified list of the names of all persons to whom certificates of license have been granted during the year ending on the next preceding 31st day of December. R.S.O. 1914, c. 163, s. 22.

20. Every person desirous of obtaining a license to practise dentistry in Ontario shall at least one month before the prescribed examination make application in the form prescribed by the Board and pay to the Treasurer the prescribed fees, and deliver to the Secretary the Treasurer's receipt for the same, together with satisfactory evidence of his service under articles and compliance with the rules and regulations prescribed by the Board, and of his integrity and good morals. R.S.O. 1914, c. 163, s. 23. *Amended.*

ANNUAL FEES.

21.—(1) Every member of the College engaged in the practice of dental surgery in Ontario shall, on or before the first day of January in each year, pay to the Treasurer, or to a person deputed by him to receive the same, such annual registration fee, not exceeding \$10, as may be prescribed by by-law of the Board, and such fee shall be recoverable by suit in the name of the Royal College of Dental Surgeons of Ontario in the division court of the division in which the member in default resides. R.S.O. 1914, c. 163, s. 24 (1). *Amended.*

(2) For any services rendered in the practice of dental surgery while he is in default in respect of any annual fee a member shall not be entitled to recover in any court. R.S.O. 1914, c. 163, s. 24 (2).

(3) Where default is made in payment of the annual fee and such default continues for a period of one month the license of a member so in default shall lapse, but such license may be renewed thereafter upon payment of the fee and an additional sum not exceeding \$10. *New.*

PENALTY FOR PRACTISING WITHOUT LICENSE.

22.—(1) No person who is not a member of the College shall, by himself or by any other person, practise the profession of dental surgery, or perform any dental operation upon or prescribe any dental treatment for any person for hire, gain or hope of reward whether by way of fees, salary, rent, percentage of receipts or in any other form, or shall pretend to hold or take or use any name, title, addition or description implying that he holds a certificate of license to practise dental surgery, or that he is a member of the College, or shall falsely represent or use any title representing that he is a graduate of any dental college or any title or

description whatsoever which implies that he practises dentistry or any branch of dentistry or which contains the words "dentist," "dentistry," "dental" or any derivative of any such word or any letters, signs or abbreviation having the like significance. R.S.O. 1914, c. 163, s. 25 (1). *Amended.*

(2) No person, other than the College, shall carry on in Ontario any school, college, laboratory or other institution for training or imparting instruction in any branch of dentistry but this shall not apply to any faculty of dentistry in a university in Ontario. *New.*

(3) Every person who contravenes any of the provisions of this section shall, for the first offence, incur a penalty of \$50, and for every subsequent offence a penalty of \$100, and he shall not be entitled to sue or recover in any court for any services which he performed, or materials which he provided, in the ordinary and customary work of a dental surgeon. R.S.O. 1914, c. 163, s. 25 (2). *Amended.*

(4) This section shall not prevent any duly articulated student of dental surgery from receiving instruction in clinics and practice under the personal supervision of a member of the College. R.S.O. 1914, c. 163, s. 25 (3).

(5) The penalties shall be paid by the convicting justice to the Treasurer of the College. R.S.O. 1914, c. 163, s. 25 (4). *Amended.*

23. In any prosecution under section 22 the burden of proof of qualification shall be upon the defendant. R.S.O. 1914, c. 163, s. 26.

SUSPENSION OR CANCELLATION OF CERTIFICATE.

24.—(1) The Board may suspend or cancel the certificate of license of a member of the College who has been heretofore or shall hereafter be convicted in Canada or elsewhere of an indictable offence if his conviction remains unreversed, or who has been or shall be guilty of any infamous, disgraceful or improper conduct in a professional respect; but this power shall not be exercised if the conviction is for a political offence committed out of His Majesty's Dominions, or for an offence which, though indictable, ought not, either from its nature or from the circumstances under which it was committed, to disqualify the person convicted from practising dentistry.

(2) Where a member has been guilty of infamous, disgraceful or improper conduct in a professional respect the power conferred by subsection 1 may be exercised, notwithstanding that he has been acquitted of a criminal charge in respect of the same matter. R.S.O. 1914, c. 163, s. 27 (1, 2).

(3) The Board or the executive committee may of its own motion, and upon the application of any four members of the College shall, cause inquiry to be made into any case in which it is alleged that a member of the College has become liable to the suspension or cancellation of his

certificate of license for any of the causes mentioned in subsection 1. R.S.O. 1914, c. 163, s. 27 (3). *Amended.*

DISCIPLINE COMMITTEE.

25.—(1) The Board shall appoint and shall always maintain a discipline committee of its own body for the purpose of ascertaining the facts of each case which may become the subject of inquiry. R.S.O. 1914, c. 163, s. 27 (4). *Amended.*

(2) The Committee shall consist of not more than five members, as the Board may prescribe, three of whom shall be a quorum. R.S.O. 1914, c. 163, s. 27 (5). *Amended.*

(3) The Board may by by-law provide that the Secretary of the Board shall be a member of the committee. *New.*

(4) The Board may pass by-laws for determining the tenure of office of the members of the committee and for the regulation and conduct of its proceedings.

(5) Subject to the provisions of this section and of the by-laws of the Board the committee may regulate the time and place for the holding, the manner of the convening and giving notice, and the conduct of its meetings.

(6) If a vacancy occurs in the membership of the committee the remaining members may appoint a member of the Board to fill the vacancy, and the member appointed shall hold office until the next meeting of the Board.

(7) Notwithstanding any vacancy in the committee, so long as there are at least three members thereof, it shall be competent for the committee to exercise all or any of its powers.

(8) The committee may employ, at the expense of the Board, for the purposes of any inquiry, such legal or other assistance as the committee may deem necessary.

(9) The member whose conduct is the subject of inquiry shall have the right to be represented by counsel. R.S.O. 1914, c. 163, s. 27. (6-11).

(10) All meetings of the committee for taking evidence or otherwise ascertaining the facts shall be held within the county or district in which the member whose conduct is the subject of inquiry resides unless such member and the Board agree to the meeting being held at the City of Toronto. R.S.O. 1914, c. 163, s. 27 (12). *Amended.*

(11) At least ten days' notice of the meeting of the committee for taking the evidence or otherwise ascertaining the facts shall be given to the member whose conduct is the subject of inquiry. R.S.O. 1914, c. 163, s. 27 (13). *Amended.*

(12) The notice shall contain a statement of the matter which is to form the subject of the inquiry.

(13) The testimony of the witnesses shall be taken under oath, which the Chairman or any member of the committee may administer, and there shall be full right to cross-examine all witnesses called and to adduce evidence in defence and in reply.

(14) If the person whose conduct is the subject of the inquiry though duly notified does not attend, the committee may proceed in his absence, and he shall not be entitled to notice of the future meetings or proceedings of the committee.

(15) The committee and any party to the proceedings may obtain on *præcipe* from the Supreme Court a subpoena for the attendance of witnesses and the production of books, documents and things, and disobedience thereof shall be deemed a contempt of court.

(16) Witnesses shall be entitled to the like allowances as witnesses attending upon the trial of an action in the Supreme Court.

(17) The committee shall report to the Board the evidence adduced and the committee's findings thereon.

(18) The Board may act upon the report of the committee and may make such order thereon as the Board may deem just.

(19) Where the complaint is found to be frivolous or vexatious the Board may pay such costs as to it may seem just to a member whose conduct has been the subject of inquiry. R.S.O. 1914, c. 163, s. 27 (14-21).

(20) Where the Board directs the certificate of license of a member to be suspended or cancelled it may direct that the costs of and incidental to the inquiry be paid by such member, and after taxation of such costs by the Taxing Officer of the Supreme Court at Toronto, execution may issue out of the Supreme Court for the recovery thereof in like manner as upon a judgment in an action in that Court. R.S.O. 1914, c. 163, s. 27 (22). *Amended.*

(21) The costs to be taxed and allowed against a member, including the costs of appeal, if any, shall as far as practicable be the same or the like costs, as in an action in the Supreme Court and the Taxing Officer may also allow such fees and disbursements for work done or proceedings taken before notice of complaint as he may deem just. *New.*

26. No action shall be brought against the Board or the committee or any member thereof for anything done in good faith under this Act on account of any want of form or irregularity in their proceedings, but a member whose certificate of license has been suspended or cancelled may, at any time within six months from the date of the decision of the Board, appeal from the decision of the Board to a divisional court. R.S.O. 1914, c. 163, s. 28.

27. The practice and procedure upon and in relation to an appeal shall be similar to that provided by *The County Courts Act* except that

the proceedings and evidence shall be certified by the Registrar to the Appellate Division. R.S.O. 1914, c. 163, s. 29. *Amended.*

28. The Board may direct the restoration of the certificate of license of any member whose certificate has been cancelled under the powers conferred by this Act upon such terms and conditions as the Board may deem just. R.S.O. 1914, c. 163, s. 30.

29. No duly registered member of the Royal College of Dental Surgeons shall be liable to any action for negligence or malpractice, by reason of professional services requested or rendered, unless such action is commenced within six months from the date when in the matter complained of such professional services terminated. *New.*

30. Nothing in this Act shall affect or interfere with the rights and privileges conferred upon legally qualified medical practitioners by *The Ontario Medical Act*. R.S.O. 1914, c. 163, s. 31.

31. *The Dentistry Act*, being chapter 163 of the Revised Statutes of Ontario, 1914, and *The Dentistry Act*, 1920, being chapter 46 of the Statutes of 1920, are hereby repealed.

SCHEDULE A.

Electoral Districts.

Electoral District No. 1 shall consist of the following counties: Addington, Carleton, Dundas, Frontenac, Glengarry, Grenville, Lanark, Leeds, Lennox, Prescott, Russell, Renfrew and Stormont.

Electoral District No. 2 shall consist of the following counties: Durham, Haliburton, Hastings, Muskoka, Northumberland, Ontario, Prince Edward, Peterborough, and Victoria.

Electoral District No. 3 shall consist of the following counties and districts: Algoma, Kenora, Manitoulin, Nipissing, Parry Sound, Rainy River, Sudbury, Thunder Bay and Temiskaming.

Electoral District No. 4 shall consist of the City of Toronto.

Electoral District No. 5 shall consist of the following counties: Bruce, Dufferin, Grey, Huron, Perth and Simcoe.

Electoral District No. 6 shall consist of the following counties: Elgin, Essex, Kent, Lambton and Middlesex.

Electoral District No. 7 shall consist of the following counties: Brant, Haldimand, Norfolk, Oxford, Waterloo and Wellington.

Electoral District No. 8 shall consist of the following counties: Halton, Lincoln, Peel, Welland, Wentworth and York (except Toronto). *New.*

FORM I.

(Section 6.)

Voting Paper.

Electoral District No.			Election 19
I,		of the	of
	in the County or District of		member of the
Royal College of Dental Surgeons of Ontario, declare:			
1. That the signature affixed hereto is my proper handwriting.			
2. That I am a voter in the Electoral District No. _____ and that			
I vote for	of the	of	in the
county or district of		a member of the	Royal College of
Dental Surgeons of Ontario and an elector in said Electoral District to be			
a member of the Board of Directors of the College for the said district.			
3. That I have not in this election signed any other voting paper, and			
that this voting paper was executed on the day of the date thereof.			
Witness my hand this	day of		19

Canadian Dental Convention—Halifax, August 16th to 19th, 1926



STEADY progress is being made in the programme arrangements, and those who have definitely promised to come include: Operative Section—Dr. H. J. Baker, Boston; Dr. A. E. Webster, Toronto; Dr. T. P. Hinman, Atlanta, Ga.; Dr. T. P. Hyatt, Dr. E. A. Lieben and Dr. W. S. Tracy, New York. Prosthetic Section—Dr. W. E. Cummer, Toronto; Dr. W. H. Hoyt, Boston; and Dr. Billy Smith, Philadelphia. Crown and Bridge and Ceramics—Dr. I. H. Ante, Toronto; Dr. W. G. Bridge, Boston. Local Anaesthetics, Exodontia and Radiography Section—Dr. W. B. Amy, Toronto. Orthodontia—Paper prepared by Dr. J. Lowe Young. Education, Public Health and National Canadian Dentistry—Dr. Wallace Seccombe, Dr. F. J. Conboy and Dr. H. S. Thomson, of Toronto, and Dr. A. W. Thornton, of Montreal.

Besides the above, a number of other papers and clinics are being arranged and the Programme Committee feel they can promise one of the best programmes ever given in Canada.

Philadelphia Trip—Those who plan to attend the International Meeting in Philadelphia can easily make connections after the Halifax meeting:

1. By Train—Leave Halifax about 9 a.m. (Daylight Saving Time) on Friday and arrive in Philadelphia about 6 p.m. on Saturday. Two routes are available, either all rail via St. John, fare \$36.81; or by rail to Yarmouth on the "Bluenose" through the Annapolis Valley to Yarmouth, then by boat to Boston Friday night, fare Halifax to Philadelphia, \$28.50.

2. By Auto—Leave Halifax Thursday afternoon after the meeting, travelling as far as Kentville (70 miles); Friday, Kentville to Yarmouth, 145 miles by good roads; Yarmouth to Boston by boat Friday night (fare, for car, \$1.00 per hundred with a minimum of \$15.00, passengers \$9.00); Saturday and Sunday, Boston to Philadelphia via New York, 334 miles.

Bulletin—A short bulletin is being prepared giving information about the meeting. Drop us a card for a copy. Dr. A. C. Kennedy will also have a supply.

Vacation Trips—Don't forget, when you are planning your vacation trip this summer, that you can combine a delightful seaside trip to the Atlantic and the Convention meetings. We will be very glad to send you booklets and help you plan the trip.

J. STANLEY BAGNALL,
Secretary, Canadian Dental Association.

34 Larch St., Halifax.

Personal Message From the President of the Ontario Dental Association



SURELY you are about tired of an all-winter grind and are about ready for a few days away from work to attend our Annual Dental Convention in May.

Our committee has worked hard to arrange a good practical and enjoyable convention for all. An effort has been made to have papers and clinics that would be most appreciated by the man in general practice, and by glancing over the programme you will surely agree we have done so. I think every man in general practice will find one or more of the branches of Dentistry that are to be presented at the convention of great interest to him.

It is well worth the time away from your office to come and compare your work with the men who are specialists in one branch and have every opportunity to be 100% in that branch. If you find you are doing the best work that can be done, you will go back to your work with a pleasing sense of satisfaction, but, if you are doubtful about some things (as many of us are) and you find the hint or message or idea you need, you will be a happier and a better dentist for coming. We have secured the best specialists possible in each branch of Dentistry and promise you a profitable four days.

We have arranged for good accommodation at the King Edward Hotel. All clinics and papers are to be held there, as well as the exhibits of the dental dealers and manufacturers. Also don't forget the happy, jolly luncheons, class re-unions, dinner dance and reception at the College. Meet the boys of your college years and you will have a great pleasure.

We hope to see a large percentage of the Ontario Dental Profession at what we trust will be our biggest and best convention yet held.

Dentists who can attend from elsewhere than Ontario will be welcomed as guests.

J. C. DEVITT.

Suggestion in Use of Saliva Ejector



IN using the saliva ejector, especially when working on the lower teeth, it is often found that the mouthpiece has a tendency to push the dam up or cause inconvenience to the patient by pressing into the soft tissues under the tongue. This may be overcome by cutting a hole in the dam in a line with and just inside the angle of the mouth, opposite the teeth you are operating on. Pass the saliva ejector mouthpiece through the hole; the dam supports the saliva ejector, prevents pressure, and the patient is comfortable.—C. A. STREET, *Dental Record*.

Essayists, Ontario Dental Association



DR. ABRAM HOFFMAN
Buffalo, New York



DR. FRANCIS S. WEIR
New York City



DR. THOS. B. MCCRUM
Deaner Institute, Kansas City



DR. FRED F. MOLT
Chicago, Ill.

Essayists and clinicians who, with Dr. Newton Thomas, of Chicago; Dr. E. L. Hatton, of Chicago; Dr. Howard H. Jackson, of Detroit, and a large number of Ontario clinicians, will appear upon the programme at the Ontario Dental Convention, King Edward Hotel, May 17, 18, 19, 20, 1926.

The COMPENDIUM

This Department is Edited by
THOMAS COWLING, B.A., D.D.S., Toronto.



A RATIONAL PERSPECTIVE IN DENTAL EDUCATION.

EVERY teacher at one time or another is apt to become impatient with pupils who require especial attention in the matter of attendance and application. Much valuable time that should be devoted to teaching must needs be given to supervision of work. That a student aspiring to any of the professions should require oversight in such matters as attendance at classes and serious application to work seems, at the first sight, unbelievable. Yet it is true of every institution. Many students devote considerable time to devising ways and means of shirking work.

Perhaps much of the blame for this attitude of mind may be traceable to the opinion so often expressed, that it is after graduation that education really begins. It is indeed unfortunate that such a viewpoint is so generally accepted as being correct. It is certainly true that after graduation the knowledge gained during student days becomes more completely one's own because then an opportunity is given for its application. Initiative in the use of acquired knowledge becomes a valuable asset. But the foundation was prepared during student days.

If, then, graduation means but an opportunity for the amplification of knowledge acquired in student days, it behooves each teacher to see that the seriousness of this preparatory period is not underestimated. It is no exaggeration to say that the loss attending lack of painstaking effort in student days can never be retrieved in after life; at least only at the cost of great effort.

Regularity in class attendance and in keeping appointments helps in forming habits of punctuality that are valuable assets to the graduate practitioner. So the time given to the enforcement of discipline is not wasted; indeed it may well be considered a most valuable part of the teacher's work.

If we accept as true the oft-repeated statement that the test of an educated mind is the ability to correctly judge evidence, or, as is sometimes said, to form correct judgments, then our methods of teaching dentistry might come in for some unfavorable criticism.

Is it not true that most of the teaching in dental subjects is done through some process of imitation or mimicry? A model is placed before the student and he is required to make a similar model; or, a method of inserting a filling is exemplified on prepared forms and the novice reproduces it. Practically all operations are taught in this manner and in many cases the reason for following the technique is left unexplained. Little, if any, thinking is required of the student; it is a sufficient test to be capable of producing a copy. Digital skill is the only real fruition of such methods. Many of the procedures are followed with consummate devotion to detail; no questions are asked as to the principles involved; it is sufficient that the end justifies the means. Of such students it may truthfully be said that their real education commences after graduation, because that which they have had during the preparatory years has not been real education.

Teachers in our dental schools find that newly graduated dentists will often carry on an extensive correspondence, the bulk of which will be inquiries as to methods of treating cases that have come to them. Lacking in the ability to judge the evidence, and having been for years the reproducers of models, they are obliged to depend upon the judgment of others. As accurate diagnoses by correspondence are often impossible, the graduate finally finds himself thrown back upon his own resources. It would obviously be better, therefore, to develop initiative and diagnostic ability in students during their undergraduate days rather than attempt such a task after they have gone out from our schools.

EXTRACTIONS DURING PREGNANCY.

 THE question of safety is very closely linked up with dental operations performed upon pregnant women. The importance of this problem is recognized, but there seems to be no unanimity of opinion regarding correct methods of treatment. At least it appears so from a cursory review of dental literature. Heretofore, dentists have been chiefly concerned about the occurrence of caries as a result of gestation and the safety of the patient when major dental procedures are necessary during that state. To-day the problem is recognized as being a much larger one. It embraces the possibility of dental defects being important factors in the causation of the so-called pregnancy toxicosis.

In the March issue of *The Journal of the American Dental Asso-*

ciation, J. E. Talbot, M.D., points out that there is involved in the extraction of infected teeth the possibility that a mild chronic infection may be changed to an active one. There is a real danger of aggravating a condition of toxemia through the removal of septic teeth. As the infection becomes active the possibility of systemic disturbance is very much increased. Were it not for the excellent drainage usually obtained through extraction more trouble would be experienced than is usually the case. Doctor Talbot is of the opinion that in cases involving many infected teeth, or where both teeth and tonsils are infected, it is practically impossible to render the patient free from infection in the presence of the ascending systemic strain of pregnancy; indeed, it is dangerous to try this at such a time.

The first three months, and especially the first two months of pregnancy, comprise a period during which septic teeth should not be interfered with, because active infection, or the acute exacerbation of chronic infection, may prove deleterious in that bleeding from the placental site may occur. Such bleeding may be the outcome of haemotogenous infection of the blood vessels. It is known that most deformities are developed during the first two months of foetal life. Deformity of the embryo is not an uncommon thing. Doctor Talbot points out that in a series of twenty-five deformed babies, damage to the placenta was shown within the first two months. It is necessary, therefore, to protect the patient from active infection during this critical first two or three-month period. The dentist should avoid extractions or even treatments of apical infections at this time.

A HINT REGARDING THE USE OF THE RUBBER DAM.—The rubber dam is still necessary in many dental operations. Yet how many operators have ever stopped to think why the patients dislike it so much? If they would chew a piece of dam as it comes from the dental depot they would learn one reason, for rubber dam not only tastes badly, it also has a most unpleasant odour. Both these factors, evil taste and odour, as well as the general cleanliness of rubber dam, may be improved by simply washing it before use. For this purpose, first soap and water are employed; then the piece of dam is rinsed in clear water, and next washed in water to which a liberal amount of mouth-wash has been added. It is then hung up and allowed to dry. After the dam has thoroughly dried, a coat of borated talcum powder is dusted upon it, when the dam is ready for use. By chewing a small piece the operator can readily convince himself of the marked improvement which this treatment imparts to the rubber.—C. M. Torrance, D.D.S.



School Dentistry

This Department is Edited by

EDMUND A. GRANT, D.D.S.

*Director of Dental Services—Department of
Public Health, City Hall, Toronto.*



We are anxious to receive for publication in this Department reports of work carried on in School Dental Centres anywhere in Canada. Papers on any phase of Pedodontia would also be welcome.—E.A.G.



Dental Department, London Public Schools



THE following is a summarized copy of the annual report of the Dental Department of the London Public Schools for the year 1925, as presented to the Board of Education.

The items of purely local interest for the Board's consideration have been omitted from this copy.

The city is divided into four sections, with a clinic operated in a central school for each section, during the morning hours of school days only.

The following is a tabulation of work done at the four clinics:

Treatments	{	Anodyne	165
		Pulp capping	468
		Abscess opened	102
		Arsenic	8
		Root treatment	121
		Root filling	79
Fillings	{	Prophylaxis	303
		Amalgam	6,565
		Oxyphosphate of Zinc	526
		Oxyphosphate of Copper	503
Extractions	{	Temporary	29
		Secondary Teeth	191
Miscellaneous Operations	{	Deciduous Teeth	2,857
			878
Total Operations			12,795
Cases	{	New	2,586
		Completed	2,511
Sixth Year Molars	{	Vital filled	2,264
		Devitalized filled	5
		Extracted	159
Relieved of pain			340

Attention is drawn to the fact that 340 children presented themselves at the clinic suffering pain, were immediately relieved, and returned to the classrooms without loss of time. These children would otherwise be sent home and would be classed as absentees from school.

The Chief Dental Officer during the year made a survey of all school children, 8,335 children being examined. Four thousand eight hundred and ninety-seven, or 60 per cent., were found to have dental defects, ranging from very minor defects to conditions that are more or less dangerous. Three thousand four hundred and thirty-eight were found to be in excellent condition, being either immune to dental diseases or having been taken care of by their family dentist, or by one of the school dentists at the clinic.

Note.—Missing teeth and irregularities were not counted as defects.

It has been found that the children of those schools where a clinic is situated, or is in very close proximity, respond best to the service. A feeling of friendliness and confidence grows between the children and dentist, which is very desirable indeed.

The Misses Eliot, MacDougall, Meek and Massey were added to the staff during the year, to act as assistants to the dentists at the clinics. Heretofore the dentists have had no assistants.

A friendly feeling of co-operation exists between the school inspectors, school teachers, school nurses and school dentists, for which the Chief Dental Officer is truly grateful.

E. W. FULLER,
Chief Dental Officer.

* * *

Report of School Dental Service, Walkerville, Ontario



THE School Dental Clinic of Walkerville was first started three years ago, and during that time it has been my privilege to do something like 15,000 dental operations, consisting chiefly of 875 root treatments, 2,664 prophylaxis, 3,413 amalgam fillings, 484 silicate cements, 200 permanent teeth extracted, 2,150 deciduous teeth extracted, and 1,766 miscellaneous operations.

The clinic is run on full-time basis—that is, 9 to 12 o'clock, and 1.30 to 4 o'clock. Every Wednesday afternoon I visit the schools and give talks to the children, changing the talks to suit the age.

Much good has been done by giving talks to the mothers' clubs, by educating the parents regarding the care of the child's teeth, and also advising them regarding diet, especially during the prenatal period, for I feel that if we hope to get anywhere in preventive dentistry we must

commence by educating the mothers and expectant mothers as to the proper diet.

We are at present about to start examining the pupils' teeth three times a year, instead of but annually as previously.

This care and inspection will do many things. It should practically eliminate toothache, and provide for the detection of cavities while they are very small, and so do away with a great deal of the fear the little ones have of the "drilling." It will eliminate a great deal of orthodontic requirement by providing for the retention of each tooth until the proper time for its loss.

I have, unfortunately, found that 80 per cent. of the children starting school for the first time each September have defective teeth. This is an alarming situation, so much so that the Board of Education has very wisely consented to the suggestion of setting aside one afternoon per week to the treatment of pre-school age children.

Where I have extracted teeth for the school pupils which have been abscessed and been the cause of the child having rheumatism, headaches, etc., I keep these teeth in a bottle of formaldehyde and use them in not only my talks to the children but also in the talks to the mothers' club. "Seeing is believing," and when you can show them the tooth with the abscess clinging to it and the history of it, I know they grasp the point I am speaking on—that abscessed teeth are dangerous and cause all kinds of systemic disturbances. Occasionally I offer a prize for the cleanest mouth, and the last time I did so the boy who won the prize had a month previously the dirtiest mouth in the school. This boy, after I had given a talk in his class room, had grasped the point regarding a clean mouth, and by his own efforts had in one month the cleanest instead of the dirtiest mouth in his room.

J. MARTIN DEANS,

Chief Dental Officer.

The Meaning of Character

“ HE character of a free agent is made by facing and fighting with obstacles; it is not formed along the line of easy successful reaction to stimulus. Facile adaptation to familiar environment is no test of character nor training in character. The personal life cannot grow into the value of which it is capable without facing the hardness of circumstances and the strain of conflict, or without experience of failure. Further, an imperfect world is necessary for the growth and training of moral beings. If there were no possibility of missing the mark there would be no value in taking a true aim. A world of completely unerring finite beings, created and maintained so by the conditions of their life, would be a world of marionettes.”—W. R. SORLEY.



PUBLIC HEALTH SERVICE

FOR THE PEOPLE ~ BY THE STATE

This Department is Edited by
FRED J. CONBOY, D.D.S.,

Director of Dental Services, Province of Ontario.



Ontario Dental Health Day



THE Oral Hygiene Committee of the Ontario Dental Association, at the request of the Ontario Department of Health, has decided to provide free dental examination and advice for all the people in Ontario who desire this assistance. This service will be given on October the 20th, 1926, the day when many health and service organizations are co-operating in an effort to inform the people of the necessity of protecting themselves against the harmful results of dental diseases.

In places where there is only one practitioner, the resident dentist will be asked to receive these patients in his own office, and when there are two or more the clinic will be held at the hospital, Town Hall or some other convenient centre.

Other activities will of course be arranged. These in the main will consist of public meetings, school surveys, essay and art competitions on dental subjects, newspaper articles and general publicity.

The Ontario Medical Association and many other health, educational and service organizations have kindly consented to assist in connection with these functions and the dental health day promises to be a great success.



THE Ontario Dental Association made a further grant of five hundred dollars to the Oral Hygiene Committee. The work being carried on by this Committee has increased so greatly during the past few months that it was necessary to double the supply of Oral Hygiene material. The new equipment will be in the hands of the Director of Dental Service within a few days and he will then be in a position to meet all requests for films, slides, charts, newspaper articles and booklets.



We are delighted to report that a large number of the county and local dental societies are appointing Oral Hygiene Committees so that they will be in a position to take an active part in connection with the activities of the Ontario Dental Health Day.

THROUGHOUT CANADA

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Provincial Editors will appreciate receiving from all local societies copies of papers, society proceedings or personal notes, for publication.



MARITIME PROVINCE NOTES.

THE regular monthly meeting of the Halifax Dental Society was held on March 16th. Dr. D. J. MacKenzie, Assistant Professor of Bacteriology, gave a talk on the bacteriology of the mouth, paying particular attention to the recent work on the B. Acidophilus which has been done particularly in England. He pointed out that it is quite possible for this organism to grow in acid concentrations which are sufficiently strong to decalcify enamel and dentine.



Dr. J. T. Roach was elected mayor of Wolfville at the recent elections.



Dr. Barrie Shaffner (Dal., 1923) who recently received his L.D.S. in London, has entered the office of Mr. C. Webb, 41 Wimpole St., London W.1, as his assistant.



Dr. R. H. Stanford, 50 Spring Garden Rd., Halifax, Pre-school-Age dentist in the Dalhousie Public Health Clinic, is moving to Sheet Harbor, N.S.



J.S.B.

QUEBEC.

MONTREAL DENTAL CLUB.

THE February and March meetings took the form of a review of the very successful First Fall Clinic held by the Club in November. Dr. Geo. Winter's clinic on Exodontia was discussed by Dr. Saunders; Dr. Thos. Hartzell's on Pyorrhea by Dr. Mowry; Dr. Woodworth's on Cast Bridgework by Dr. Bushell;

Dr. French's on Prosthetics by Dr. Dohan; Dr. Osgood's on Radiology by Dr. Walsh; Dr. J. Lowe Young's on Orthodontia by Dr. McClellan.

These reviews were handled in a splendid way, and were illustrated by slides, diagrams, models and appliances.

On March 12th the members of the Club were guests of the Mount Royal Dental Society, to hear a splendid clinic by Dr. Schwartz, of New York, on Removable Dentures.

A. N. J.

* * *

ONTARIO.



THE following letter was received by Dr. A. W. Ellis, Chairman Oral Hygiene Committee of the Ontario Dental Association:

Dear Sir:—

I have the honor to acknowledge with thanks copy of report of the Sub-Committee of the Oral Hygiene Committee of the Ontario Dental Association.

To those who are taking an interest in the promotion of health, this report is extremely gratifying, as indicating the interest of the dental profession.

I was particularly interested in some of the special notes, for example: Instruction to Nurses-in-Training; Dental Service in Hospitals; Dental Service in Unorganized Districts; Publications re Oral Hygiene and Dental Services, etc.

I further wish to say that both the Hon. the Minister of Health and his Deputy appreciate the very cordial relations that have developed between the dental profession of Ontario and the Department of Health, largely through the efforts of the Oral Hygiene Committee.

Yours very truly,

W. J. BELL,

Deputy Minister of Health, Province of Ontario.
Toronto, 24th March, 1926.

* * *

DOCTOR WICKWARE ELECTED PRESIDENT.



AT the recent meeting of the Ontario Educational Association, Dr. E. H. Wickware, of Smith's Falls, was elected President of the Association. This is indeed a high honor that has come to a member of the Dental Profession, and we extend congratulations.

W. G. T.

SASKATCHEWAN.

RS. SMITH and MORRISON some months ago took over the practice of Dr. R. H. Layng, of Kerrobert. Dr. Layng has located in Regina. Dr. Smith has recently been at the Mayo clinic receiving professional treatment.

Dr. W. O. Butler, of Wilkie, who has been in practice for fifty-two years, has recently disposed of his practice, and, with Mrs. Butler, has gone to live in California.

Dr. Uren, Toronto '24, has entered into partnership with Dr. Rose at Kindersley.

Dr. R. Newlove, of Hawarden, Sask., has gone to Saskatoon, where he has become associated in practice with Dr. D. J. Ferguson.

Dr. J. K. Brimacombe, Weyburn, was recently elected Mayor of his home town.

Dr. C. C. Craigie, of Regina, who has been indisposed for some time, is reported as improving in health.

* * *

The Regina Dental Society held its last meeting of the season on March 22nd, and elected the following officers for the ensuing year: President, Dr. F. K. Switzer; Vice-President, Dr. C. C. Craigie; Secretary-Treasurer, Dr. W. F. Smith.

The society had the pleasure at its last meeting of entertaining the Moose Jaw Dental Society, when Dr. "Jimmy" Plunkett, of Moose Jaw, read a paper on "Wadsworth Articulation." The paper and clinic were both well presented, and evoked a good deal of discussion from members of both societies. It is the intention of the new officers to develop the idea of inter-city clinics next year.

The Provincial Dental Convention will be held at an early date in Saskatoon. Last year Saskatchewan did not have their annual convention, having joined with Manitoba in the Western Canada convention at Winnipeg.

The charges of malpractice against Dr. E. R. Dobbs, of Moose Jaw, last month, were dismissed with costs. When the case was called either the prosecutor nor his counsel appeared.

C. W. P.

* * *

ALBERTA.

HE promotion of Mr. A. E. ("Ted") Sinclair from Calgary to the management of the Ash-Temple Company's branch at Winnipeg was the occasion for a farewell banquet, given by the Calgary Dental Society on February 6th last.

Exactly seventeen years from the above date, and on one of his comparatively few birthdays, "Ted" arrived in Calgary to open a branch of the Temple-Pattison Company, of Toronto. Since that time he has

been a loyal friend, and given unstintingly of his time and service to the dentists of Calgary and the large territory he served. The growth of the business under his care has been coincident and closely connected with the growth of the profession in this part of Western Canada.

The banquet, under the expansive chairmanship of John Dixon, was a great success. Suitable toasts were proposed. The new Manager Mr. H. G. Harris, was given a welcome, and the entertainment was concluded by a presentation to Mr. Sinclair of a sterling silver testimonial service, together with the best wishes of the many friends he leaves behind.

* * *

The application of Mr. Lees, the Edmonton dental mechanic who has been three times convicted and fined for illegal practice, to the Supreme Court of Alberta, for permission to carry his case to the Privy Council at London, has been withdrawn.

Instead, there is a very strong, organized effort to have the following amendment placed on the statute books of Alberta: "Nothing in this Act shall prevent any person from taking the impression of gums and making or fitting plates and false teeth, if such person has, prior to the first day of March, 1926, been employed for that purpose by a member of the Dental Association, or passes such examination in the fitting and manufacture of false teeth as may be prescribed by the Senate of the University of Alberta." The far-reaching consequences, if this effort should be successful, can easily be imagined, and no trouble is being spared to show the members of the Cabinet and the Legislature the great harm to the public and the dental profession which would follow such action.

* * *

It is a source of great gratification to the members of the Alberta Dental Association that the Legislature of the Province has emphatically decided against an amendment to the Dental Act, which was introduced into the House on the last day of March.

This amendment, if passed, would have licensed dental mechanics to make all removable pieces, both full and partial,—where no work was necessary on the natural teeth—either in the offices of registered dentists, or in establishments of their own.

Early in the session there was a marked sympathy with this amendment, and a very energetic campaign, setting forth the wrong to the public and to the profession of such iniquitous proposals, was necessary to help bring about the recent satisfactory and just result.

* * *

Dr. M. Killins, a graduate of R.C.D.S., has commenced practice, with special attention to children, in association with Dr. P. G. Atkinson, in the Herald Building, Calgary.

J.W.C.

Dr. C. N. Johnson to the Dental Profession

FASHIONS.

I BELIEVE in fashions, but not in freaks, and some of our so-called fashions are freakish. The grotesque aberrations of art which we see in some of our fashion magazines are an offence to the eye of anyone who has the slightest artistic taste or the least conception of the harmony of form or figure. It is fortunate that people in actual life can seldom quite live up to the hideous deformities which we see portrayed in some of these publications. People who design or sell wearing apparel—particularly that to be worn by women—seem to unite in a common effort to make the styles as ludicrous and inartistic as possible—and they succeed. If it were not for the fact that most women improve the clothes they get into we should be treated to some very sad spectacles. Apparently the prime object of our designers is to make illustrations which are grotesquely out of proportion, and which lack any of the lines of symmetry and grace. It would be terrible if all these pictures were possible of reproduction into actual garments. It would make the average onlooker with any artistic sense run and shade his eyes.

And the freakishness of one season is outdone only by the freakishness of the next. The purveyors thrive on change of styles, and the women only succeed in toning down the extremes of one season so that they begin to look a bit attractive and harmonious, when off go the designers on a tangent into a fresh freak of so-called fashion. It is bewildering, and I am heartily sorry for the women who are called on to keep up with the vagaries of those who are supposed to set the styles.

Before I go any further it might be well to remark that I am not inveighing against the short skirts, over which there has been so much comment. It is the one sensible thing that the designers did, and I am not sure that they are wholly accountable for it. I prefer to think that the women themselves are mostly responsible, as a just rebellion against one of the most hideous and pernicious garments a woman ever wore—the long, sweeping skirt. If ever there was an abominable perversion of suitable clothing, it was that skirt, and no one will ever be able to estimate the damage that was done by it. As a medium of gathering up and carrying into the home all the filth and dust of the streets that garment reigned supreme. It is well that in the days when it had its greatest vogue we knew so little about disease germs and infection—the very thought of it would have made many of us ill. I smile when I note the shocked and sanctimonious reflections on the short skirt by writers who see so much evil in it, and I am tempted to remind them that the evil would not be apparent if they did not put it there by their mental attitude. Their sanctimoniousness is not very convincing to me, and I am thankful to say that it does not seem to go very far in convincing the ladies. Anything as sensible and sanitary as the short skirt

will never be moralized out of fashion—at least I hope it never will. Of course, there may be varying degrees of shortness, and on this point I retreat from the discussion, and leave the matter entirely at the disposition of the ladies. I refused to be intrigued into committing myself on the particulars of this subject, and am content to abide by the decision of those who are most affected by it—the ones who wear skirts.

But I sometimes find myself in sharp disagreement with the prevailing ideas of the fair sex, and there is a recent tendency among them again which I line myself up most emphatically. I refer to the craze for “reducing.” Shades of the immortal!—must a woman be nothing but skin and bone to be beautiful? A plump, hearty and healthy woman unhappy to-day because, forsooth, fashion has set its seal that she should be thin. Every ambition of women is centred in slimness and “straight lines,” and it is being fostered by these fashion-mongers. Just this very moment my eye fell on an advertisement before me containing the picture of a woman. She hasn’t so very much on, but there is something there I call a “combination garment”—whatever that may be. I am not complaining of the picture, but there is a statement in the text that should be suppressed by the censor. It reads like this: “Soft, smooth, rhythmic grace and luxurious comfort is yours when you wear this lovely combination garment, which coaxes wayward figures into lines of slim straightness.” Lines of slim straightness, forsooth! Nothing suits the woman of to-day but to be “straight up and down as a yard of pump-water,” and if that is beauty, I have lost all my artistic taste. Evidently the Venus de Milo was a blunder. All these years we have been deluded into the idea that Greek art was worth while, and that when it essayed the portrayal of the human form it had a reasonably clear conception of what constituted lines of beauty. Now we find that we have been all wrong, and that the lines of real beauty should be straight instead of curved. If this idea continues to prevail I shall pray that my lot in the next incarnation may be cast with the ancient Greeks instead of the modern Americans.

I am not arguing for gross fatness. These ponderous, blubbery people are no more to my liking than the pump-water kind, but there is a happy medium. Too much fat is not only unsightly, but it is a menace to health, and it should be resolutely taken off by rigid diet; but this has nothing to do with the ordinary reducer of the day, whose chief mania is “slimness” and “straight lines.” And let me whisper this last word in her dear little ear, that to reduce unwisely is to play tag with ill-health and to inevitably be caught before the end of the game. Some of our girls are beginning to look emaciated, and emaciation is not beauty.

C. H. Johnson

Obituary

J. H. SPRINGLE, D.D.S.

 DOCTOR J. H. SPRINGLE, of Montreal, following a very brief illness, died on Saturday, March the 20th, 1926. The late Doctor Springle was in active practice for many years.

* * *

PETER BROWN, D.D.S.

FTER a long, painful illness, borne with wonderful fortitude and resignation, Doctor Peter Brown, of Montreal, died on Saturday, March 27th, 1926. Doctor Brown was a broad-minded, kindly man, esteemed by a large circle of acquaintances and affectionately regarded by his intimate friends. The late Doctor Brown was the first Dean of the Faculty of Dentistry of McGill University, and one of the pioneer dentists of Montreal. Doctor Brown had been in poor health for over ten years, and was compelled to give up his practice a year ago.

He was born in Montreal, in 1860, and received his education at St. Ann's School and the New York Dental College. In 1884 he graduated from old Bishop's College, and became one of the teaching staff and finally Dean of the Faculty of Dentistry, which later was absorbed by McGill.

Doctor Brown was a past-president of the College of Dental Surgeons of the Province of Quebec, and a year ago was the recipient of a formal presentation from his professional associates. He was awarded an honorary degree from McGill in 1914. Doctor Brown survived by his widow, one son James, four daughters and a sister. All residents of Montreal.

* * *

WILBERT WILKEY, D.D.S.

 DOCTOR WILBERT J. WILKEY, who practised in London South, died Thursday, April 1st, 1926, at his parents' home, after an illness that lasted over six months. The late Doctor Wilkey was born in 1895, and received his primary education at the Lorne Avenue School and the Central Collegiate Institute, and took his degree in dentistry at the Royal College of Dental Surgeons, Toronto, in 1921.

He first commenced his course at the Dental College in 1915, but in December of the following year enlisted with the R.A.M.C. on the

hospital ship *Letitia*. This ship was torpedoed, and he was transferred to *H.M.H.S. Araguaya*, and in all he crossed the Atlantic twenty-four times. He was also in Halifax at the time of the disastrous explosion and was one of those who did excellent emergency work.

In 1918 he returned to the Dental College to continue his studies. Following the conferring of his degree he went to Parkhill and there commenced practice. A year later he established a practice in London South.

Last October he was taken seriously ill and removed to St. Joseph's Hospital. After several weeks in hospital he went to his parents' home but later was forced to enter Victoria Hospital for treatment. His condition appeared to improve for a time, but recently became worse. Surviving are his widow and two small children.

Six of Doctor Wilkey's former classmates—Doctors E. N. Fuller, W. D. Smyth, J. A. Milne, A. F. Barnes, Fred Kennedy and S. A. Moore—acted as pallbearers.

Telephone Etiquette



A CORRESPONDENT has written the Editor complaining about a friend who follows the practice of requesting his assistant to call people to the telephone and then keeps them waiting on the line until his assistant notifies him and he reaches the telephone. Our correspondent requests that we publish a few suggestions that might be adopted by telephone users. Here they are:

Respond to bell promptly, not by saying "hello," but by giving name of dentist distinctly and in a courteous tone.

When dental nurse or office assistant rings a number for the dentist the latter should be ready to speak *immediately* when person called answers the telephone.

Telephone conversations should be carried on in as courteous a manner, at all times, as if the persons conversing were meeting personally. Be patient with the operators, even though mistakes do occur occasionally. Attention of clerks and assistants to your enquiries is usually increased by a pleasant manner. Even when the person at the other end of the line is unknown to you, speak to him as courteously as if you were face to face. Irritability and ill-temper are quite as deplorable over the telephone as in personal conversations.

In the final analysis the true gentleman requires none of the above suggestions, for they are all embodied in his cultured, well-bred manner which includes a kindly, considerate attitude towards others.

Oral Health

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ol. 16

TORONTO, APRIL, 1926

No. 4

EDITORIAL

Canadian Dentistry and Good Citizenship

WE publish as a frontispiece this month a photograph of the late George W. Beers, who was not only an excellent dentist, but a leading citizen of Canada. Dr. Beers believed in Canada, and had confidence in her development and progress. He made an outstanding contribution both to his chosen profession and to his country, and is an inspiring example well worthy of emulation. Members of the learned professions are not engaged in commerce, but nevertheless have an important role to play in the development of their country. And the members of the dental profession are no exception. They have an important contribution to make to the citizenship of the Dominion, as well as to the health of the people.

* * *

There are many evidences that the year nineteen twenty-six marks the beginning of definitely improved business conditions throughout the Dominion of Canada. Canada has been dragging along close to the

bottom for upwards of five years, but indications now point to a steady and progressive development. Building in Canada for the month of January was the highest on record since 1913, with the exception of 1920, when price levels were abnormally high. Indeed, industrial building during the month amounted to over two and one-half times as much as in January, 1925. The employment index for the building trades stood at the highest point yet recorded for January, and commercial failures continue to decline, both in number and in volume of liabilities. Canadians are justified in facing the future with confidence and high hopes.

* * *

The extent of prosperity will rest largely with the Canadian people themselves. It is not a matter of national wealth, of productiveness or of government, so much as the spirit of the people. It is essential that the Canadian people unite upon the solution of their many difficulties.

Our national problems are great—greater, perhaps, than those of most countries. But they are not insurmountable. East, west and centre must frankly, fearlessly and sympathetically face national difficulties and work unselfishly together for their solution. This is the only way in which we can progress and take full advantage of the great opportunities that lie before us.

Dentistry is a young profession, and her contribution should be forceful, constructive and unifying. Whether Canada is our natal state or our country by adoption, the onus rests upon each member of the profession to cultivate a spirit of leadership and do his part in so moulding the thought of his community that there may be developed throughout Canada a national patriotism such as will produce a unified, virile and prosperous people.

Correspondence

"TEETH AND HEALTH."

Glasgow, March 10, 1926.

Sir,—The Corporation of Glasgow deserves great praise for its excellent discourse with which this winter's series of health lectures closed last night, when Dr. William Guy, Dean of Edinburgh Dental Hospital, spoke on the subject of "Teeth and Health," and several instructive American films belonging to the Dental Board of the United Kingdom were shown, depicting the great importance of oral hygiene. It is a matter for regret that such lectures are not held more frequently and in every part of the city, for the necessity of attending to the teeth is understood only by a small proportion of the community, and on

an only hope that many similar lectures will be given in the near future.

Dr. Guy very wisely stressed the great importance of how much trouble can be prevented by the care of the teeth, and cited a list of diseases which in many cases could be traced to neglected teeth.

Many present must have been astonished to hear that in 1925 only 5.7 per cent. of all children examined at school dental clinics in Glasgow had no decayed teeth.

Health depends upon all the teeth in the mouth being sound, and good teeth depend upon a rational diet, the proper toilet of the mouth, and six-monthly visits to the dentist, when any discoloration can be easily removed and minute cavities filled. This ought to commence at a very early age and continue throughout adult life.

It was very interesting to students of sociology to hear that Dr. Guy had "a shrewd suspicion that there is a definite casual relationship between oral sepsis and industrial unrest, lightning strikes and Bolshevism," and as sound teeth depend largely on a properly balanced diet of "fruit, vegetables, milk, eggs and wholemeal bread"—to quote the diet advised in one of the films shown—it is interesting to read that a well-known American dietician, Dr. Tilden, goes much further, and says that "Crime is a disease brought on by bad habits. It is made up of such elements as a sluggish liver, brought on by over-indulgence in alcohol; or too much sugar, fat, and starchy foods. Such habits bring on discouragement, amounting to pessimism and a reckless indifference to consequences. These consequences may be reversed in the same subject, showing that good and bad depend on the kind of stimulation used in exciting reaction.

"The intoxication from starch poisoning causes the building of pessimism. Gloom leads to recklessness and a desire to be thrilled by new sensations. Normal sensation is dulled when starch poisoning is pronounced, and common appeals, such as good advice from parents or guardians, have no influence.

"This dulling influence extends so far as often to strike a withering blow at the fountain-head of intelligence—namely, attention. The power of attention—power of continuous attention—is the secret of intelligence and intellectuality."—I am, etc.,

J. MENZIES CAMPBELL.

* * *

Tweed, March 12th, 1926.

Dr. Wallace Seccombe,
Editor, ORAL HEALTH, Toronto.

Dear Dr. Seccombe,—In your editorial in February ORAL HEALTH on "Incidence of Caries in Permanent Teeth," the following questions arose:

(1) Why is the occlusal surface of the lower molar more susceptible to caries than that of the upper?

(2) Why is the proximal surface of the upper incisor more susceptible than that of the lower?

It would seem reasonable to suppose that those teeth which are most directly bathed by the fresh saliva, after it leaves the ducts, naturally have a better chance to resist caries than those teeth more remote from the ducts.

It is reasonable to suppose that stimulated saliva flows in the same direction as natural flow of saliva. By observing direction of flow of stimulated saliva while working in the mouth without a rubber dam, it will be seen that it flows from Stenson's duct and is guided by the cheek first or mainly on to the buccal surface of the upper first and second molars and second bicuspid, and then on to the occlusal surface of those teeth. Smaller quantities flow down the cheek to the buccal surfaces of the lower molars, and anteriorly and posteriorly on to the other upper teeth, from the cheeks.

From Wharton's duct it is guided by the movements of the tip of the tongue directly against the lingual of the lower anteriors, and is forced between these teeth. Smaller quantities seem to flow laterally and back to the bicuspid and molars.

When working in the mouth without a rubber dam it is much easier to maintain a dry field by the use of rolls on the upper anteriors and lower molars on occlusal surfaces than on upper molars and lower anteriors, which helps to prove direction of flow of saliva.

Salivary calculus is deposited mainly on the teeth saliva first strikes. Greatest deposits are found on lingual and proximal surfaces of lower anteriors and buccal and occlusal of upper molars, proving direction of flow of saliva.

It would seem reasonably obvious that cavities will develop in those surfaces of those teeth which are bathed indirectly by saliva which has lost part of its neutralizing power by passing over several teeth on the way.

WM. A. PAUL.

Old Copies of R.C.D.S. Announcement Wanted



R. W. E. WILLMOTT, Secretary of the Board of Directors of the R.C.D.S., is very anxious to secure a copy of the Announcement and Minutes of the Board for the year 1900-01 (blue cover), to complete a file of the announcements and minutes from the first issue. Will the older practitioners kindly look over their "archives" and endeavor to find a copy, and mail it to 240 College Street, Toronto?

Every person is responsible for all the good within the scope of his abilities, and for no more, and none can tell whose sphere is the largest.

—*Gail Hamilton*

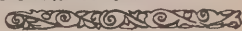


GEORGE KERR THOMSON, D.D.S., HALIFAX, N.S.
*Dean, Faculty of Dentistry, Dalhousie University, and President
Canadian Dental Association, 1924-26.*

DOCTOR THOMSON was born in New Brunswick in 1870, and graduated in Pharmacy which he practised for upwards of eight years. After graduation from the Philadelphia Dental College, Doctor Thomson practised dentistry in Annapolis, Yarmouth, and latterly in Halifax. Dean Thomson is one of the pioneers in dental educational work in Canada, and has given valuable service to the profession through active co-operation in the work of provincial and national dental organizations. He was Secretary-Registrar of the Nova Scotia Dental Board for many years, and has been Dean of the Faculty of Dentistry, Dalhousie University, since March 1925.

ORAL HEALTH

*A JOURNAL THAT STANDS FOR THE OUNCE OF
PREVENTION AS WELL AS THE POUND OF CURE*



Vol. 16

TORONTO, MAY, 1926

No. 5

Canadian Dental Association

PRESIDENTIAL MESSAGE.

TO the Members of the Dental Profession,—Through the columns of the Dental Journals you have already received an invitation to visit the Maritime Provinces and attend the meeting of the Canadian Dental Association, from August 16-19, 1926, in Halifax. Information with regard to steamer, railway, and motor routes to Halifax, thence to Philadelphia, and other places of interest, has also been published, and further details may be obtained by applying to our Secretary.

In Halifax we are very fortunate in having the co-operation of Dalhousie University, the campus and buildings of which will be at our disposal for meetings, clinics and entertainment, and the various local committees have already planned a unique, interesting and most instructive programme. It is our hope that this meeting will mark an epoch in the history of the Canadian Dental Association, and that action will be taken to make it even more representative than ever of the dental profession in Canada, which is already recognized as an important factor in the health of our nation. While preventive and public health dentistry will be featured at the Halifax meeting, you will note that practical clinics of the highest and most modern types will be presented by prominent practitioners.

In August our Maritime Province climate is delightfully cool, thousands of tourists visiting us during the summer season for that reason alone. Our entertainment committee is arranging special attractions for the ladies and several families from Canada and the United States will spend their vacation in the Maritimes before and after the meeting.

As President of the Canadian Dental Association, and on behalf of our members in the Maritime Provinces, I have extreme pleasure in extending greetings with a most cordial invitation to visit us in August.

Yours fraternally,

GEORGE KERR THOMSON.

Foreign Bodies of Dental Origin in the Lung and Bronchi*

G. W. FLETCHER, M.B., M.D., F.A.C.S.

Associate Professor of Otolaryngology, University of Manitoba.



PLEASE accept my thanks for your kindness in affording me the opportunity of addressing you this evening. The subject I have chosen is "Foreign Bodies of Dental Origin in the Lungs." I think you will agree with me that these cases, though rare as compared with the total number of cases involved, occur with sufficient frequency to warrant a full discussion of the matter.

Please do not interpret my remarks as being in any way a criticism of the dental profession, but rather as a constructive effort to call your attention to, and emphasize, the gravity and importance of the subject mentioned. I shall give first a general summary of the facts known in this regard, and later report a number of cases which have come under my notice during the last few years.

The most comprehensive report on this subject that I have found is that of Dr. Gill, of Roanoke, Va., who presents an analysis of eleven cases classified as follows:

Teeth	76	Hard rubber from dental mouth	
Artificial teeth	6	gags	1
Dentures or dental plates	8	Disk of Allen's dental cement..	1
Dental burs or instruments.....	9	Nerve canal reamers	1
Dental fillings	3	Gold tooth bridges	2
Blade of forceps	1	Dental broaches	1
Plaster of Paris	1	Tartar from teeth	1

LOCATION OF FOREIGN BODY.

Right Bronchus	2	Left Bronchus	1
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NATURE OF THE ACCIDENT.

Majority under general anæsthetic.

Gas	19	Kicked by horse	1
During sleep	2	Making cast for mouth	2
While eating	1	While in petit mal	2
While coughing	2	While in intoxicated stupor	1
Dental chair	9		

The nature of the accident was not stated in 50 cases, but in all but one case some operation about the mouth was being performed when the accident occurred.

* Read before the Winnipeg Dental Society, December 8th, 1925.

SYMPTOMS AND SIGNS.

The most important and definite symptom is cough, which varies from an occasional one to one that is persistent, and accompanied by profuse expectoration. In this series cough is mentioned as a symptom in 64 cases; it was the only symptom in six cases. Dyspnoea was present in 17; pneumonia in two cases; cyanosis in two; pain in the chest in 28; hæmatisis in 14; nausea in one; elevation in temperature in 19; profuse expectoration in 40; consolidation of the lungs in five; night sweats in four. The symptoms were not stated in 31 cases. Thirty-two patients developed lung abscess. Of this number 17 recovered, 13 died. Results not stated in two cases.

SOJOURN.

The sojourn in the lung of foreign bodies presented in this series varies from four hours to thirteen years. In the case of short duration the foreign body was removed bronchoscopically by Forbes. This patient was in a dental chair having a gold crown fitted to right upper tooth. The crown became loosened during a fit of coughing and disappeared. The suspicion of the dentist was aroused by the immediate development of coughing, and an x-ray examination of the chest showed the crown in the lung. The dentist was complimented upon his prompt action.

In the case of thirteen years' duration, reported by W. C. Carpenter, four porcelain teeth on silver clamps were aspirated during a fit of coughing. X-ray examination was not made and bronchoscopy was not attempted. The patient died, and post-mortem findings showed a large empyema cavity containing pus, lung collapsed, denture of four teeth found in the pleural cavity, the left lung being tubercular.

In those fatal cases where post mortems have been performed the following pathological changes have been found. Most frequent is abscess of the lungs; also gangrene of the lung, empyema, bronchiectasis, changes of the pleural cavity, and in one case pericarditis. One must remember that these are the final and end results. In recent cases, judging by symptoms and x-ray pictures, the first change seems to be a local infection around the site of the foreign body, accompanied by increased secretion. This gradually becomes more extensive as the infection spreads and more bronchi become involved. The infiltration of the lung below the position of the foreign body gradually increases until finally an abscess is formed. This gradually increases in size, and may finally rupture into the pleural cavity or into the bronchus. The secretion at first is frothy or of mucoid character, but soon becomes purulent and larger in amount. Later markedly fetid expectoration develops and continues as long as the foreign body remains. In contradistinction to those cases of abscess developing as sequela of lung conditions proper, the prognosis

after removal of the foreign body is good, and it is astonishing to note the rapidity with which symptoms clear up after successful operation.

TREATMENT.

- | | |
|--|---|
| 1. Symptomatic or expectant.
19 recovered.
16 died.
Results uncertain in 3 cases. | 4. Thoracotomy—23 cases.
13 recoveries.
6 deaths.
4 results uncertain. |
| 2. Pleural bronchoscopy—44 cases.
Successful in 38.
Body not found in 6. | 5. Tracheotomy—4 times.
3 successful.
1 death. |
| 3. Lower bronchoscopy through
tracheal wounds was successful
in 6 cases. | 6. Artificial pneumothorax.
1 case successful. |

Of six bronchoscopic theatres one resulted in abscess and death. One death followed partial pneumonectomy; four attempts at bronchoscopy failed. The foreign body, a dental bur, had lodged in the upper lobe bronchus.

In four remaining bronchoscopic failures, the patient recovered, the foreign body probably having been coughed up.

RESULTS IN 117 CASES.

84 Recovered	{ 38 removed by bronchoscope. 37 coughed up. 5 removed by lower bronchoscope. 3 removed by tracheotomy. 1 relieved by pneumothorax.
9 Uncertain.	
24 Deaths	{ 14 lung abscess. 1 following tracheotomy. 3 symptoms resembling T.B. 1 bronchiectasis. 1 pneumonectomy. 4 not stated.

COMMENT.

Hedblom, of the Mayo Clinic, in writing a paper on abscess of the lung following operation about the mouth, says that with few exceptions these operations were performed under general anæsthesia. The upright position adds greatly to the danger of the operation.

Gardiner, of the Mayo Clinic, recommends that the patient should be watched quite as carefully with a local anæsthetic as with a general one. He advises the use of gauze sponges, which he claims in no way interfere with the work of the operation and also take care of the hemorrhage. He also recommends careful examination of the teeth before operation, to ascertain whether the work might displace pieces of tartar or even the teeth themselves during the anæsthetic. He states that the mouth gag used during the anæsthetic may easily dislodge a loose tooth.

Conclusions of E. A. Gill, of the paper quoted:

1. In every operation about the mouth care should be taken to prevent aspiration infection.

2. Symptoms in most cases are immediate. Cough, pain in the chest and hæmatisis.

3. Later symptoms resemble pulmonary tuberculosis; seven cases in this series were diagnosed as T.B.

4. Bronchoscopy is indicated in any case as a diagnostic measure if the history and x-ray findings are not conclusive.

5. When the presence of a foreign body has been definitely established, there is only one treatment,—bronchoscopy.

6. Expectant treatment is always hazardous. Lung abscess may develop at any time.

Chamberlain, of Cleveland, says that the published reports of cases do not give any fair or accurate idea of the number of these cases that occur. He also states that as a good many dentists have never had any experience of this kind they speak lightly of the possibility and think that the danger is insignificant. He thinks the bronchoscopist who sees more of these cases should emphasize the danger to the dentist whenever opportunity offers.

Carmody, of Denver, issues a warning to physicians doing tonsillectomy, that loose teeth are liable to become dislodged by the mouth gag and to become lodged in the air passages.

Dr. Chevalier Jackson, who has seen a large number of these cases, compliments the dental profession as a whole upon the relatively small number of these cases that occur and thinks that dental work on this continent must be of a high average quality.

CASE REPORTS.

Patient L. D., age 40; admitted June 19:

E. C.

1. Pain in right side of chest.

2. Cough.

Patient states that he had all of his teeth extracted last Saturday, June 13th. On Tuesday, June 16th, he developed a severe pain in the right side of the chest. The pain was stabbing in character, and was much aggravated on deep breathing or cough. His cough was acute, shallow and troublesome; it commenced at the same time as the pain. He is bringing up very little sputum—clear in color.

Past Illness:

No recollection of any illness.

Family History:

Father—dead of brain hemorrhage.

Mother—pneumonia.

One brother—A. & W.

One sister—A. & W.

Physical Examination:

Patient is a fairly well nourished man of about forty years of age. He is propped up in bed, and is evidently suffering considerable pain. His breathing is short and jerky.

Head and Neck:

Eyes—React to L. & A.

Ears—Apparently O.K.

Teeth—All removed.

Tongue—Clear and moist.

Chest:

Normal healthy shape. Moots, somewhat limited on right side—due, I think, to cramped position. No dullness nor abnormality noted over area complained of.

Heart—apparently O.K.

Abdomen—negative.

Extremities—negative.

Reflexes—O.K.

June 20th—Strapping applied to chest—eased the pain considerably.

June 21st—X-rays show no abnormalities. Pain much better.

Patient's condition apparently much improved.

June 22nd—Ice pack applied to affected area. Strapping removed. Ice packs seem to relieve condition very much.

July 4th—Operation; Dr. G. W. Fletcher.

Right bronchial tube explored for foreign body—possibly extracted tooth. Pus observed flowing freely from a branch of the bronchus high up in the upper lobe. Suction repeatedly applied, but no foreign body found. X-ray negative.

Findings:

Abscess of lung opening into bronchus. No foreign body present.

X-ray report, June 22nd, 1925:

The diaphragms are normal.

The heart and great vessel shadows are normal.

No definite evidence of any lesion of the lungs.

X-ray report, June 30th, 1925:

There is mottling in the upper lobe of the right lung, possibly an abscess.

X-ray report, July 11th, 1925:

The diaphragms are normal.

The heart and great vessel shadows are normal.

There is a cavity in the right upper lobe with a definite fluid level indicating a lung abscess.

Cause of Death:

Death ensued at the Winnipeg General Hospital, July 27th, 1925

The primary cause of death was recorded as Empyema R.—Secondary, Pneumonia broncho.

Patient, A. B., age 35:

1925

July 6th—Teeth (3) extracted 12 days ago, under gas anæsthesia. One tooth missing since that time. She has had troublesome cough—was coughing a great deal right after gas.

July 4th—X-ray taken shows a foreign body in right bronchus, probably tooth.

July 5th—Bronchoscopy under general anæsthesia. Tooth found low down in right bronchus, partially covered with fibrin and granulative tissue which bled easily, grasped and brought to cords where it slipped.

Bronchoscope re-introduced and tooth seen quite high up, grasped and forceps withdrawn. We thought tooth might have slipped again and been swallowed.

Cough pronounced right after operation and has been since.

July 7th—X-ray shows tooth still in right bronchus, but higher up, just below attachment of third rib.

July 8th—Tooth extracted with bronchoscope by Dr. Fletcher.

X-ray report, July 7th, 1925:

There is a tooth in the lower posterior vertebral bronchi at the level of the anterior end of the third rib.

Patient, B.M., age 6 years:

1925

April 4th—Nine teeth extracted two weeks five days ago. Seven were recovered, two missing. Extraction under nitrous oxide.

Coughed when she was coming out of gas, and coughed later ever since. Temperature was 104 tenth day after extraction; has been running from normal to 101.5 F.

She began to spit pus 12 days, and has been spitting ever since—less for two days, but again to-day.

Physical signs:

Dulness, bronchial breathing and rales are less to-day than for the previous week on L. side. R., no signs. X-ray shows foreign body in left bronchus.

April 5th—Bronchoscopy—General anæsthesia. Dr. Grant, Dr. Wright assisting.

5 mm. bronchoscope (Jackson). A great deal of fluid removed by suction and sponges before foreign body came into view in main L. bronchus, low down. Body grasped, but forceps slipped. Second attempt—tooth brought up through glottis and lost in pharynx; recovered from mouth. Time, 40 m.

April 6th—Temperature normal—good night.

April 7th—Tooth-ache—very little cough—no yellow expectoration.

Abrasives

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ABRASIVES have a very important and extensive application in dentistry. Upon their judicious use depends the success of many essential processes; hence an intimate knowledge of more commonly-used abrasive materials is desirable.

Were the use of grits and polishes confined solely to mechanical operations such as the preparation of prosthetic appliances, etc., then there need be little concern as to their effectiveness for the particular work to which they are assigned, because experience proves an apt teacher. If a denture is harmed through the use of too coarse an abrasive then the lesson is quickly learned and is not soon forgotten; but if a natural tooth is injured through a similar error of judgment, then the damage is irreparable. For this reason, if for no other, a consideration of the abrasive materials used in dentistry should prove of interest.

HARDNESS.

In general, it may be stated that the abrasive efficiency of any one material upon another is dependent upon the relative degree of hardness possessed by each. The hard material is capable of abrading or scratching the softer substance. In other words: any attempt to classify abrasives is, in effect, a comparison of the physical property designated as hardness.

HARDNESS OF METALLIC SUBSTANCES.

The accurate determination of hardness in metals is a task fraught with considerable difficulty, and many and varied are the methods formulated to effect a solution. Interpreting the term hardness as the resistance offered by the molecules of one substance to separation by the penetration of another body, then, in the case of metals, hardness may be tested and recorded as the resistance offered to indentation.

Upon this basis many methods have been evolved for testing the hardness of metals. For instance: Ballentine's test depends upon the fact that a known and constant weight allowed to fall through a known and constant distance will exert a known and constant force. If a sharpened point is attached to the weight, then the material under test will be indented. Thus the relative hardness of metals can be determined by the depths of the indentations.

A modification of this same principle is used in various forms of lever machines devised to register, on a dial, the amount of pressure required to indent the material under test.

HARDNESS OF NON-METALLIC SUBSTANCES.

As dental abrasive materials are usually non-metallic, the methods adopted for determining the hardness of minerals are of more interest. For this test a group of ten common minerals is arranged in order of increasing hardness. This list is known as Mohs' Scale of Hardness. The term hardness is interpreted as the resistance offered by a mineral to abrasion or scratching. It is essentially the same principle as that used for the determination of hardness in metals.

In this mineralogical table, there are ten degrees of hardness recorded; No. 10 will scratch any other mineral listed in the scale, while No. 9 will scratch all below it, and is itself scratched by No. 10. In the interpretation of this scale, brittleness must not be mistaken for hardness, although many hard substances are also brittle. Hardness has also no relation to resistance to compression. Glass is harder than wood, but will not withstand the compressing force exerted by a hammer blow. Mohs' mineralogical scale is as follows:—

- | | |
|-------------|-------------|
| 1. Talc | 6. Feldspar |
| 2. Gypsum | 7. Quartz |
| 3. Calcite | 8. Topaz |
| 4. Fluorite | 9. Corundum |
| 5. Apatite | 10. Diamond |

Although this method of ascertaining the hardness of minerals appears easy, some precautions are, nevertheless, necessary. In a fibrous specimen, a scratch directed across the fibres will always indicate a lesser degree of hardness than the true one; therefore, the trial scratch should be parallel to the fibres or, better still, on the surface of a transverse fracture. It is advisable, also, to make several trials in order to obtain correct results. Thus: suppose the specimen is chalcocite, then gypsum (No. 2) will not scratch it, but calcite (No. 3) does so readily. By reversing the process, it is found that the specimen under test will scratch No. 2 readily, but will not touch No. 3. On testing it further with a file, it is found that the specimen is not rubbed away so readily as No. 2, but more readily than No. 3. From these observations the hardness is determined as 2.5.

Aside from the use of this list of minerals in the determination of hardness, it will be observed that many of them are of dental importance as sources of supply of dental abrasives, refractories, plasters and porcelains, viz.: talc, gypsum, feldspar, quartz, corundum and diamond.

GRINDING AND POLISHING.

In many dental procedures grinding and polishing may be considered as one and the same thing; or, the polishing may be treated as the culmination of the grinding process. It has already been observed that in the mineralogical scale the tabulation is based upon the fact that one mineral is capable of abrading or scratching another. A similar situation is evident in the selection of abrasives. The abrasive material, as a rule, must have a hardness equal to or greater than that of the material to be ground or polished. It is possible, however, to use a softer material as an abrasive, provided it is applied with compensating force. The final application of Jeweller's rouge in the polishing of gold illustrates this method. In this instance a cloth buff is impregnated with a fairly mild abrasive, but it brings out the natural gold lustre, because the rouge is applied under pressure.

Ordinarily, the best results are obtained through using a series of abrasives in diminishing order of hardness. The application of the final and least abrasive material should leave the surface of the treated article smooth and free from scratches. Of course, it is possible to use the same grade of abrasive all the way through the polishing process, but with diminishing pressure as the work proceeds. Personal skill and experience are important factors in obtaining good results from any of these methods.

TOOTH ENAMEL AND ABRASIVES.

The theory of tooth development that has been most generally accepted, is that when the natural tooth erupts, the membrane which has had so much to do with enamel development is lost, and the complex process resulting in enamel formation is brought to a close. With the deference due those who believe in the possibility of remineralization of enamel by means of soluble mineral salts, it must be stated that such prophylactic measures are so far only experimental. The enamel of the erupted tooth does not grow and there is no provision for repairing injury. The protection of the enamel from attacks of bacterial and abrasive forces is, therefore, a duty of first importance, since the enamel once removed from a tooth is lost beyond recovery.

The selection of suitable dentifrices has taken on a new importance in recent years, due to the enormous increase in the use of such preparations. Many of the dentifrices in general use have too abrasive an action upon tooth enamel. Some of the preparations used with a view to the remineralization of teeth possess ingredients which, if used in the dry form, would prove very abrasive, but the danger is not real, due to the fact that these ingredients are readily soluble; indeed, their efficiency as a prophylactic depends upon this characteristic. To every in-

dividual, whether professional or layman, this question of abrasives in dentifrices is of great importance because many of the popular powders and pastes contain destructive polishing agents which are capable of denuding and abrading tooth enamel.

Many cases are seen where the frequent use of a highly abrasive dentifrice has resulted in the wearing of definite paths through the enamel. This is particularly noticeable across the labial and buccal surfaces of the teeth of those who adopt the crosswise motion when brushing the teeth. Where hard polishing agents are used daily and, in many instances, several times a day, the enamel suffers severely and the destructive action may even be observed on the cementum in cases of receded gums. Gold and porcelain restorations frequently suffer similarly.

It is but the veriest common-place to say that severe abrasives should never be used by the patient. They are reasonably safe only when applied by an expert, and even he should carefully select the cases. As already pointed out, the efficiency of any abrasive may be modified simply in the manner of its application; pressure, speed and time are important factors.

From Mohs' mineralogical scale of hardness we find that the minerals are graded according to their ability to scratch. With this thought in mind, it may be of some interest to examine the commonly-used dental abrasives and ascertain to what extent they are capable of abrading natural tooth enamel and silicate cement restorations.

When applying this scale of hardness, allowance must be made for the fact that many of these abrasives, when applied to natural teeth, are modified by incorporating with them glycerine, soap, oils, etc., all of which act as lubricants and so lessen the abrasive efficiency. This is also true of Jeweller's rouge, which is the oxide of iron powder molded into stick form with paraffin or other similar material.

A review of the properties of each of the abrasives follows:

ALUMINA Al_2O_3

Pure alumina is seldom found in nature; the nearest approach to it being the mineral bauxite.

Bauxite $\text{Al}_2\text{O}(\text{OH})_3$, is looked upon as the decomposition product of feldspathic rocks (granites, gneisses, etc.) and frequently contains as much as 25 per cent. of iron oxide.

Alumina may be considered as a form of purified bauxite. It is quite as infusible as silica and, like silica, is sometimes used as a flux. Its hardness is from 1 to 3, and its specific gravity is 2.5,

SCALE OF APPROXIMATE HARDNESS OF DENTAL ABRASIVES.

N.B.—Hardness of Natural Tooth Enamel—5.5 to 7. Hardness of silicate porcelain—6.3.

Dental Abrasive	Mohs' Scale of Hardness	Mineral Species	Dental Uses.
Diamond	10	Diamond	Preparation of cavities in porcelain teeth.
Carborundum	9.5	Corundum	Grinding wheels, powder, strips, disks, etc.
Corundum	9	Corundum	" " " "
Emery	7-9	Corundum	" " " "
Ruby (powder)	7-9	Corundum	Polishing powder for platinum, disks, etc.
Sand	7	Quartz	Sand-paper.
Silex	7	Quartz	Prophylaxis.
Garnet (powder)	6.5-7.5	Garnet	Sand-paper, disks, etc.
Tinstone (powder)	6	Cassiterite	Medium abrasive.
Pumice (powder)	6	Cassiterite	Polishing metals and vulcanite, also prophylaxis.
Tripoli	5.5-6.5	Tripolite (opal)	Polishing metals and vulcanite.
Rottenstone (earthy variety)	1	Cassiterite	Prophylaxis.
Putty powder and Stannic oxide	4-5	Calcite	Dentifrices.
Calcium phosphate	4-5	Calcite	Dentifrices and mild abrasive.
Chalk	3-3.5	Magnesite	Dentifrices.
Magnesium carbonate	2.5	Calcite	Mild abrasive for metals.
Whiting	2.5	Calcite	Dentifrices.
Magnesium oxide	2	Bauxite	" " " "
Alundum	1.5-3	Bauxite	" " " "
Alumina	1-3	Hematite	Dentifrices.
Rouge	1-3	Talc	Mild abrasive for metals.
French chalk	1-2.5	Tripolite (opal)	" " " "
Tripoli (earthy variety Rottenstone)	1		

USE.

In the preparation of metallic samples for microscopic analysis, good results may be obtained through substituting alumina for rouge in the final polishing.

ALUNDUM.

Alundum is the product formed when bauxite is fused in an electric furnace. Its composition varies and its hardness is from 1 to 3.

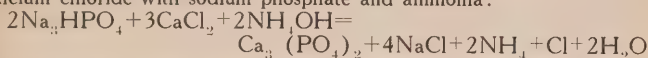
USE.

As a mild abrasive and polishing agent in the preparation of metallic samples for microscopic analysis.

CALCIUM PHOSPHATE $\text{Ca}_{10}(\text{PO}_4)_2$

This compound may be prepared by dissolving bone-ash in hydrochloric acid and precipitating the solution with ammonia water. The precipitate is likely to contain traces of calcium fluoride and magnesium phosphate.

Pure calcium phosphate is prepared by precipitating a solution of calcium chloride with sodium phosphate and ammonia:



It is a white, tasteless, amorphous powder, insoluble in cold water, but soluble in hydrochloric and nitric acids.

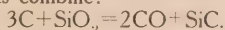
USE.

As an abrasive in dentifrices.

CARBORUNDUM SiC .

Carborundum is next to the diamond in hardness. It is not a mineral, being made up chiefly from coke and sand. The union is brought about by means of the electric current.

Crushed coke and finely sifted sand, together with several other ingredients, are placed in an electric furnace and subjected to heat generated on account of the high resistance of the mixture, for about thirty-six hours. All the impurities in the sand and coke are destroyed and the two constituents combine:



On cooling slowly an outer crust forms which consists of a thick black mass of amorphous carborundum. In the inner core are found the beautiful carborundum crystals.

These crystals are crushed by immense steel crushers, washed, sorted and carefully graded. Clay or other suitable binding material is then added to the crystals and the mass is molded into wheels of various

sizes. These are then vitrified by heating in suitable kilns. Carborundum has a hardness of 9.5.

USES.

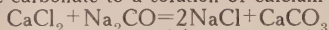
On account of its hardness, Carborundum is rapidly supplanting corundum as an abrasive. Carborundum cuts tooth tissue without producing excessive heat and leaves a smooth, even surface. This is due to the fact that the crystal edges are just brittle enough to break slightly under pressure. A rapid and clean cut is thus made possible.

CHALK Ca CO_3

Chalk or calcium carbonate occurs in nature as the mineral calcite which varies in color from white to yellow; indeed its color may be almost anything, according to the impurities contained.

Chalk, which is a form of calcite, occurs in nature as soft, white, or greyish, earthy masses consisting chiefly of the remains of foraminifera—fragments of minute shells, etc. It has a hardness of 3 and a specific gravity of 2.72. The hardness depends largely upon the included impurities, which are mostly sand and clay with a trace of hematite.

For dental purposes, chalk is best prepared by adding an aqueous solution of soluble carbonate to a solution of calcium salt:

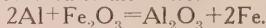


USE.

As an extremely mild abrasive in dentifrices and for polishing metals.

CORUBIN.

This material is a by-product in the Thermit welding process. In this process aluminum powder and iron oxide (Fe_2O_3) are mixed together and covered with a small quantity of aluminum powder and barium peroxide. It is then ignited with an ignition fuse. The mixture burns rapidly and a very high temperature is reached quickly. The oxide of iron is reduced to the metal:



USE.

Corubin is used as a mild abrasive and is particularly useful in the preparation of metal specimens for microscopic analysis.

CORUNDUM Al_2O_3 .

Corundum is found as a constituent of certain metamorphic and igneous rocks, and represents an excess of alumina in the original molten masses from which these rocks crystallized. Were it not for the cost,

corundum could be used as an ore of aluminum. The natural occurring varieties of corundum are the ruby, sapphire and emery.

Corundum is perhaps the most valuable of all natural occurring abrasives, having a very wide application. For many processes there is no satisfactory substitute. In addition to being hard, it possesses cleavage or parting planes, consequently new surfaces are constantly being presented as the mineral breaks down in working. Clean surfaces and quick cutting are possible when corundum is used as an abrasive. Corundum often occurs in very large crystals, grey, brown, or bluish, and occasionally red, blue, yellow or multi-colored. Some colored specimens, particularly the red and blue varieties, are the much prized ruby and sapphire gems. Ruby dust is valuable as an abrasive for polishing platinum. Emery, of similar composition to the ruby, also has a wide application in the arts. Corundum is readily distinguished by its hardness, which is 9, and its high specific gravity, which is 4. It is infusible and also unattacked by acids. Although hard, it is comparatively brittle. Much of its abrasive efficiency is due to this property.

USES.

Corundum powder, sand-paper disks, abrasive tape, stones, etc., are made in forms readily adapted for dental purposes. The pure opaque varieties of corundum are used for the same purposes as emery, but always command a higher price.

DIAMOND C.

Only inferior stones and a poorly-crystallized variety known as bort or boart, are used for abrasive purposes. The fragments which have a hardness of 10, are, for dental purposes, mounted on mandrels to be used with a lathe or handpiece.

USE.

The diamond is used in dentistry chiefly for the preparation of cavities in artificial teeth. In such operations it cuts quickly and accurately. Where necessary, corundum powder worked in with a hardened drill will prove a good substitute. Diamond dust is often used for the same purpose, the particles being held together as a paste with water.

EMERY Al_2O_3 .

Emery is a variety of corundum, Al_2O_3 , and is generally quite impure. It may be considered as an intimate mixture of corundum, Al_2O_3 ; magnetite, $\text{Fe}(\text{FeO})_2$; hematite, Fe_2O_3 ; quartz, SiO_2 and spinel, $\text{Mg}(\text{AlO})_2$. Impurities are often present to the extent

of about 40%. The color of emery varies from a dark grey to a black. Its hardness is from 7 to 9, but is usually lower than any of the other varieties of corundum. The crystals of emery are carefully crushed and separated from foreign materials before using.

USES.

Emery is used in the granular form for polishing and grinding down surfaces, especially of metals. Wheels, whetstones and other forms of abrasive instruments are made by mixing grain emery or corundum with a suitable cementing material and then molding the mixture into desired forms, such as wheels, etc. The molded forms are then hardened by baking in kilns. Emery paper, disks, etc., have a very extensive dental application.

GARNET.

Garnet is a very common mineral. In color it may be red, brown, yellow, green, or black; occasionally white or colorless. In composition, it varies considerably and may be represented by the general formula $R''_{\cdot\cdot} R'''_{\cdot\cdot} (SiO_4)_{\cdot\cdot}$ in which R'' may be calcium, magnesium, manganese, or ferrous iron. R''' may be aluminum, ferric iron, or chromium.

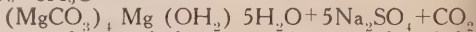
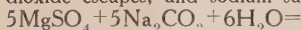
USES.

Some forms of garnet are valuable as gems. The massive and compact variety is used as an abrasive and for manufacturing sandpaper.

MAGNESIUM CARBONATE $(MgCO_3)_4 Mg(OH)_2 5H_2O$

The normal magnesium carbonate $MgCO_3$ is found in nature in the mineral magnesite, but the official preparation contains the carbonate, hydroxide, and water.

Magnesium carbonate for dental uses may be obtained by boiling a solution of magnesium sulphate with a solution of sodium carbonate. A precipitate of magnesium carbonate is thrown down; some carbon dioxide escapes, and sodium sulphate remains in solution:



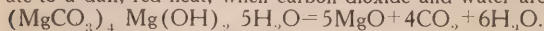
The precipitate, after washing and drying, remains as a fine, light powder.

USE.

Magnesium carbonate is used as a mild abrasive in dentifrices.

MAGNESIUM OXIDE MgO .

Magnesium oxide may be prepared by heating magnesium carbonate to a dull, red heat, when carbon dioxide and water are driven off.



Magnesium oxide is a light, white, amorphous powder and almost tasteless. It absorbs moisture and carbon dioxide gradually from the air, and in contact with water it forms the hydroxide $\text{Mg}(\text{OH})_2$, which is almost insoluble in water.

Milk of Magnesia is the hydroxide suspended in water (1 part in about 15).

USE.

As a mild abrasive in dentifrices, to which it imparts a slight degree of alkalinity.

PUMICE.

Pumice, which is used either in the form of a powder or as pumice stone, is a silicious material and probably contains the silicates of iron, aluminum, calcium, magnesium, sodium, and potassium. It may best be described as the frothy form of volcanic glass. Though having a specific gravity of 2.4, on account of its cellular structure, it floats on water. Much of the abrasive action of pumice is due to this peculiar cellular structure. Its hardness is 6.

USES.

As a general abrasive for metals and vulcanite. It is also used in prophylactic treatments.

PUTTY POWDER SnO_2 .

Putty powder consists mainly of stannic oxide SnO_2 . It is prepared by the oxidation of metallic tin with hot nitric acid. The initial product is stannic nitrate. On the addition of water, the stannic nitrate is completely hydrolyzed, forming nitric acid and metastannic acid H_2SnO_3 ; this latter forming the precipitate.

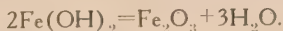
Metastannic acid is a white powder, insoluble in water or acids, and when heated is converted into stannic oxide SnO_2 . This oxide is ground and the heavier particles are separated by levigation.

USES.

As an abrasive in prophylaxis, being especially efficient in the polishing of porcelain.

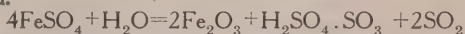
*ROUGE Fe_2O_3 .

Jeweller's rouge consists of extremely fine iron oxide. It is a red-dish-brown powder which is usually molded into stick form with chalk and paraffin. Rouge may be obtained by heating ferric hydroxide to expel the water.



It may also be produced in the preparation of fuming sulphuric acid

from ferrous sulphate. Ferric oxide is left over after the acid is formed.



A mineral called hematite Fe_2O_3 which contains about 70% iron, is somewhat comparable with rouge, and pure samples may be used as an abrasive when suitably treated.

Rouge owes its efficiency to its softness and freedom from grit. It is used as the final polishing material for metals.

USES.

Rouge, sometimes called Jeweller's rouge, or gold rouge, is used as the final polishing material for gold. It also produces a steel-like surface with vulcanite.

SAND SiO_2 .

Sand is an impure form of quartz SiO_2 , and is used loose or in the form of sand-paper for polishing vulcanite. Its use is similar to that of garnet or emery.

SILEX SiO_2 .

Silex is a form of crystalline quartz. There are very many varieties of quartz, all having similar chemical composition, but with different physical properties. Silex is composed of practically pure silica and corresponds to the general formula SiO_2 . Powdered silex may be obtained for dental uses in a very fine state of subdivision. It has a number of industrial applications, such as the manufacture of refractories, metal polishes, paints, asbestos shingles, pottery, water-glass, etc.

The suitability of any given sample of silex for special applications is determined more from familiarity with the feel of the material than from any well-defined physical or chemical tests; hence there is little opportunity for standardization of quality. Silex has a hardness of 7 and a specific gravity of 2.65.

USES.

As an abrasive in prophylaxis and in the manufacture of sand-paper.



Talc is considered as an alteration product of non-aluminous magnesium minerals. Three of the chief varieties are:

- 1, Foliated talc with a hardness of 1.
- 2, Steatite or soapstone, hardness 1.5 to 2.5.
- 3, French chalk, hardness 1.

*Jeweller's rouge should not be confused with rouge that is used as a cosmetic.

Any of these may contain impurities, mainly iron, aluminum and nickel. The color varies, being green, white, grey, yellow and brown. Malachite is characterized both by its extreme softness and greasy, soapy feel. It is unattacked by acids.

USES.

As a mild abrasive in dentifrices and for fine metal polishing.

TRIPOLI.

Tripoli may be considered as a mixture of aluminosilicates of variable composition. The nearest approach to it in the mineral series is tripolite, known also as diatomaceous or infusorial earth. It is in reality a variety of opal $\text{SiO}_2 \cdot \text{H}_2\text{O}$. Tripolite being a mixture of aluminosilicates of variable composition, its hardness depends upon the constituents. One variety called rottenstone (with a hardness as low as 1) is a brown, soft mineral, the color being caused by the presence of iron oxide Fe_2O_3 . Tripolite is looked upon as the decomposition product of silicate rocks, or as a form of infusorial earth, and is found in beds similar to marl or chalk. Its composition is due to the silicious cells or frustules of minute organisms called diatoms. The opal minerals, to which class tripolite belongs, vary in hardness from 5.5 to 6.5, while the earthy varieties are as low as 1 in hardness.

USE.

As a mild abrasive in polishing metals.

WHITING Ca CO_3 .

Whiting is pulverized chalk cleansed of impurities, and is used as metal polish.

Doctor C. N. Johnson Occupies New Offices

 R. C. N. JOHNSON has announced the removal of his office to the Garland Building, 58 East Washington Street, Chicago. This is the building in which are located the offices of the American Dental Association, which will enable Dr. Johnson to more conveniently give attention to his duties as Editor of the Journal of the A.D.A.

Nitrous Oxid-Oxygen Anaesthesia For the General Practitioner*

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THE popular superstition regarding anæsthetics is so strong that most people are afraid of the word. In the past severe torture was usually inflicted in performing any sort of operation, and the first methods for eliminating pain were so crude that they were of little avail, and in themselves often proved fatal. Consequently, it requires much persuasion to induce people to take a general anæsthetic. Once taken, however, they become good "boosters" for it. The first object is to eliminate fear from the patient's mind. There is practically no danger in administering nitrous oxid and oxygen correctly to anyone, but pain and the fear of pain are dangerous to all. Nitrous oxid-oxygen is a safe anæsthetic because it causes less chemical reaction in the organism and less disturbance to the nervous system than any other agent. Unfortunately, it is an asphyxiant as well; herein lies practically the only danger.

MANUFACTURE OF NITROUS OXID.

To obtain a perfect and smooth anæsthesia it is essential that the anæsthetist use pure nitrous oxid.

Certain nitrous oxid tanks have been found to contain nitric oxid, ammonia compounds, and other impurities, in quantities sufficient to cause nausea and vomiting. All of these are being prevented by some manufacturers who use chemically pure ammonium nitrate as a base, for unless there is a chemically pure base there can be no final product which can be labelled pure.

Consequently, in the manufacture of nitrous oxid the first step is to have an ammonium nitrate free from chlorids and sulphates and organic impurities. Cheap commercial grades of nitrates cannot be used with success, for they will not produce a finished gas which is absolutely pure and free from all impurities and foreign matter.

The nitrate must be dissolved in water, and by precipitation with given quantities of nitrate of silver, etc., the chemical impurities are released, after which, the solution being filtered, the precipitates and organic impurities are removed. The remaining solution is then placed

*Courtesy of the Dental Cosmos.

in aluminum vessels and heated until the excess water is evaporated. The nitrate is then neutralized and crystallized, and is ready for use.

The crystals are placed in aluminum retorts rather than iron, where there is liable to be a chemical reaction, and heated to a temperature of 225°C ., when the nitrate becomes to all purposes nitrous oxid and water.

The utmost precaution must be taken at this stage, for various gases are found, such as nitric oxid, ammonia compounds, etc. To eliminate these—and they must be eliminated—several manufacturers have different methods. The one generally used is to pass the gas through towers where there is an intimate contact with neutralizing agents such as lye, sulphuric acid and potassium permanganate, thus neutralizing the alkaline substances. It is only by actual contact with the gas and purifying solutions and the constant sampling of the gas that the resultant gas can be pure. Even then water must be eliminated and more tests made before the gas is ready for the cylinder.

Suppose the gas is now ready for the cylinder and is found to be pure, the question will be—will the gas be as pure when it comes out of the cylinder as when it went in? Not unless the manufacturer takes pains to see that every cylinder, before being filled, is emptied of any oil, water and grease, and is then steamed out and thoroughly dried.

Nitrous oxid in its pure form is a colorless gas, possessing a rather sweet taste and odor, and has a specific gravity of 1.527. It is neutral in its reaction, and consists of nitrogen and oxygen in chemical combinations known as nitrous oxid.

Nitrous oxid (N_2O)	99.75
Oxygen (O_2)	trace
Water (H_2O)	00.05
Nitrogen (N)	00.20

Nitrous oxid can be liquified with a pressure of fifty atmospheres at a temperature of 70°C . In this form it can be readily stored in steel or iron cylinders. Liquid nitrous oxid is colorless and mobile; specific gravity of .939; one ounce N_2O equals four gallons of gas.

PHYSIOLOGY OF N_2O ANÆSTHESIA.

Anæsthesia is the loss of sensation; that is, the tissues fail to respond to irritation. Tissue irritability is in proportion to its oxygen content. Decreased oxidation results in decreased irritability, consequently decreased oxidation or loss of oxygen in tissue is the cause of anæsthesia. Nitrous oxid, therefore, produces anæsthesia by replacing the oxygen in the tissues.

During normal respiration the venous blood as it enters the lungs contains about twelve volumes of oxygen to each 100 cc. of blood. As

the blood leaves the lungs for arterial circulation it contains about nineteen volumes of oxygen to each 100 cc. of blood. This increase of oxygen content of the blood is due to the fact that the hemoglobin in the blood has the property of combining with oxygen gas in certain definite proportions. This compound is known as oxyhemoglobin. Oxyhemoglobin is an unstable compound; if placed in an atmosphere containing no oxygen it will dissociate, giving off free oxygen. This type of hemoglobin is known as reduced hemoglobin.

The receptor in the hemoglobin may similarly unite with other gases and form compounds similar to oxyhemoglobin. Thus hemoglobin can unite with carbon monoxid (CO) and form carbon monoxid-hemoglobin; with nitric oxid (NO) it can form nitric oxid-hemoglobin.

During nitrous oxid anæsthesia a similar phenomenon occurs. The reduced hemoglobin, returning from the tissue circulation to the lungs ready to be charged with oxygen, receives instead the nitrous oxid gas the patient has inhaled. The N_2O unites with the hemoglobin, forming a chemical union. This compound, like oxyhemoglobin, has the power to dissociate. That is, the hemoglobin can discharge the N_2O , and can again be charged with it. As the nitrous oxid hemoglobin circulates throughout the body it dissociates, and the venous blood returns "reduced hemoglobin" to the lungs, only to be recharged with nitrous oxid gas. More and more oxygen is displaced from the tissues in this manner; the more oxygen displaced the deeper the anæsthesia.

In order to administer N_2O successfully it is essential to know the following:

- (1) The technique of administration.
- (2) Anæsthetic symptoms.
- (3) Indications and contraindications.
- (4) What to do in case of an emergency.

TECHNIQUE OF ADMINISTRATION.

An expert exodontist may, if he works at top speed, extract a whole set of teeth with one application of pure nitrous oxid. The patient is subjected to the gas until saturated and cyanosed, and when all is over both the patient and operator are exhausted. Anæsthesia of this type should be a thing of the past, for, with modern methods and apparatus available to every dentist, the patient should never be saturated with N_2O , and the operator should work without any undue haste and its natural consequences.

With pure nitrous oxid we can obtain anæsthesia in about fifty-five seconds; that is, in less time than is required by the blood to absorb the nitrous oxid and complete one cycle. This rapid induction causes

a sensation of suffocation, due to the too sudden removal of oxygen from the blood stream. This suffocating feeling causes undue excitement. Cyanosis is quickly established, and the anæsthetic effects are quickly lost.

The patient should be prepared as for any general anæsthetic, *i.e.*, removal of tight bands, etc., and the emptying of bladder and bowels. He should be seated in the chair as for any dental operation. As soon as he is relaxed insert the mouth prop selected in the proper position. Adjust the nasal inhaler so that it will not be possible to inhale any air, as this delays the desired anæsthesia. The air and rebreathing valve on the nasal inhaler should be open, and the patient instructed to breathe naturally through the nose. The first few inhalations will naturally be pure air obtained through the air valve. As soon as he finds that there is nothing unusual about this procedure, the N_2O and oxygen are turned on, and after two or three inhalations the air valve is closed, so that from then on the patient "lives out of the machine." The mouth is covered with the mouth inhaler and the valve opened, so that if the patient is a stubborn mouth-breather he can obtain the gas through the mouth as well. All air should be prevented from entering the lungs from now on, in order to produce proper anæsthesia.

The induction of nitrous oxid and oxygen should be sufficiently slow to allow time for the gas to be absorbed by the blood and carried throughout the circulation. Slow induction is accomplished by the admixture of 7 to 10 per cent. oxygen during the first minute of anæsthesia. Then follow by pure nitrous oxid until the desired stage of anæsthesia is obtained, about the second stratum of the third stage; this will take from forty to fifty seconds; then add oxygen in sufficient quantity to maintain anæsthesia, which is from 7 to 10 per cent. by volume for normals, using the open-mouth method.

During the induction period the volume of gas delivered to the patient should be that of average normal adult breathing—that is, three gallons per minute.

When a state of complete narcosis is reached, the exhaling or rebreathing valve on the nasal inhaler is shut down, the mouth cover or inhaler removed, and the valve controlling the same is closed. This prevents any escape of the anæsthetic between the patient and the machine, and makes it necessary for him to take any amount which we force through the tubing. The anæsthetic passes from the machine directly through the nose to the patient's lungs, and is exhaled partly through the mouth into the atmosphere. The throat is at this time packed to prevent foreign objects and air from entering the lungs.

To continue the anæsthetic through the nose with the mouth open, it is necessary to force the anæsthetic into the nose hard enough so that

the patient cannot breathe the air against it. We therefore increase the force of the gas when we close the rebreathing valve and remove the mouth inhaler. The volume of gas delivered, five to eight gallons per minute, will then be greater than normal breathing, that is, three gallons per minute. The patient will consequently be forced to breathe through the nose even though his mouth be open. The operation can now be performed.

Always have the patient breathe naturally; never encourage hard and deep breathing. Deep breathing causes over-ventilation of the lungs, pumping the blood dry of carbon dioxid.

Athletic and nervous patients will often start breathing hard at the outset. This can be overcome by placing the hand on the chest and using considerable pressure. Respiratory action may also increase before narcosis is reached, thus depleting the bag of its contents. Should this occur, the rebreathing valve should be shut. The gas will thus be conserved, making it unnecessary to force the flow.

If the patient shows a tendency to resist the anæsthetic, as in case of alcoholics, it may be necessary to force the flow to about six to eight gallons per minute. If it becomes necessary to stimulate respiration during anæsthesia, the rebreathing valve should be closed. Carbon dioxid from the rebreathing will restore the normal respiration.

During the entire anæsthetic period the face should have a rosy color, and the patient should breathe a little more audibly than ordinarily. This can be maintained only by the addition of a sufficient quantity of oxygen. If too little oxygen is administered, or when too much pressure is employed, so that it is impossible for the patient to breathe against it, or in case of stoppage of the throat, the color will change to a bluish tint known as cyanosis. This is caused by mechanically robbing the blood of its oxygen. It is only a warning to the anæsthetist that the administration is wrong, a natural danger signal.

It is of the utmost importance to pack the throat with a good-sized piece of gauze, to which a string is attached, as soon as the patient has passed through the second stage. This will prevent the accidental passage of a tooth or filling into the lungs, and it will prevent the sick and depressed sensation caused by drawing blood and mucus into the lungs and stomach. The dilution of the gases with air and subsequent difficulties will also be avoided by the use of a throat pack.

Do not allow the patient to rest his chin upon his neck, as this tends to close the air passages. Always have the chin well elevated.

It is safer to administer warm nitrous oxid, as it is then more readily absorbed by the blood, the resulting anæsthesia is more profound and there is quite a saving in the anæsthetic.

When the operation is completed close the controlling valves of the apparatus, remove the nasal inhaler and allow the patient to rest a

while. As soon as the patient shows signs of consciousness, suggest to him that he was ideal and that he took the anæsthesia nicely. Assist the patient to remove the sponges and mouth prop, and ask him to spit all accumulated blood into the basin. Do not allow him to lean forward too suddenly, as this may cause nausea. Keep the patient quiet until he regains full consciousness.

SYMPTOMS OF N_2O ANÆSTHESIA.

General anæsthesia is divided into four stages: *first*, analgesia; *second*, excitement period (at this stage no dental or surgical work should be done, as pain is usually felt more keenly and the patient becomes possessed of hallucinations which make him uncontrollable); *third*, the surgical stage, which is divided into three strata; *fourth*, the danger stage.

The older methods of determining the point of anæsthesia were, first, to have the patient hold his arm upright, and when it fell anæsthesia was supposed to have occurred. Second, the operator used to lift the patient's hand from time to time, and when the hand relaxed the patient was supposed to be anæsthetized. The first method should not be used, because one of the most important prerequisites of anæsthesia is relaxation, and no one can relax while trying to hold up his arm. The second method often fails because many patients become lazy at the point of analgesia and will relax and drop the arm. To extract teeth during the first stage of anæsthesia would certainly be erroneous, as only the sensory nerves are then paralyzed.

One of the best tests is the absence of corneal reflex. This can be determined by raising the upper lid of the eye with one finger and touching the lower eyelid with another. If the eyeball flinches the patient is not yet under. Where there is no corneal reflex present it is safe to operate. Do not insert the finger in the eye, as infection may result.

Another sign for deep anæsthesia is prolonged exhalation; that is, breathing becomes mechanical.

The pupil dilates somewhat during the second stage, begins to contract as the first stratum of the third stage is reached, continues to contract during the second stratum, and begins to dilate as we reach the third stratum; as the fourth or danger stage is reached the iris is almost concealed by the marked dilatation of the pupil.

The eyeball begins to roll as the second stratum is reached, remains fixed, and assumes an eccentric position during the third stratum and begins to jerk in the fourth stage. The eye, being nearest the brain, will show anæsthesia symptoms more accurately and sooner than any other part of the body. The eye is controlled by four sets of muscles, some of which may be anæsthetized before the others. If one set is anæsthetized the eyeball will roll in the opposite direction; when all

are affected the eyeball will stare straight ahead, and the patient is then under deeper anæsthesia.

A patient in dangerous condition from too much N_2O would be black in color (badly cyanosed), with eyes staring from the sockets and the tongue swollen, closing the air passage in the throat, eyeball jerks prompted by spasmodic contraction of the muscles, respiration shallow, and there is present a marked pupillary dilation.

With excess oxygen the color would remain practically normal and respiration would cease. Death from oxygen can only occur if pure oxygen alone is administered for a considerable length of time.

CONTRAINDICATIONS AND INDICATIONS OF N_2O .

It would be unsafe for the *general* practitioner to administer nitrous oxid to the following:

Patients suffering from status lymphaticus.

Bilious patients.

Exophthalmic goitre.

Intoxicated persons.

Those having a bad anæsthetic history.

Tubercular patients.

Nitrous oxid may be given with safety up to the seventh month of pregnancy. After that time it is not safe to administer the anæsthetic. If it has to be given, unusual precautions should be taken not to excite muscular movement. The dangers that might arise are, *first*, interference with circulation to the fetus, if the patient becomes cyanotic; *second*, premature delivery caused by spasmodic muscular contraction and struggling on the part of the patient.

Children respond to normal induction, except that they go under more quickly and symptoms develop rapidly. Consequently it is difficult to follow accurately the different stages. There is a tendency to rigidity as they reach deep anæsthesia. It is, therefore, advisable to administer a higher percentage of oxygen when prolonged anæsthesia is desired.

It is seldom necessary to use premedication in the use of $N_2O + O_2$ in dental practice, as most operations are of short duration.

Extremely nervous individuals can be relaxed by hypodermic injections of a solution of $\frac{1}{8}$ gr. morphin in 2 cc. of 25 per cent. chemically pure magnesium sulphate one hour before anæsthetization.

Any of the following may be administered:

Allonal (Roche) 6 gr. one-half hour before.

Veronal 10 gr. by mouth one-half hour before.

Chlorotone 15 gr. administered in five gr. doses, one-half hour apart.

Peralga 9 gr. three-quarters of an hour before.

Bromural 10 gr. one-half hour before.

WHAT TO DO IN CASE OF AN EMERGENCY.

The conditions we may encounter during N_2O administrations are (1) nausea, (2) respiratory stoppages, preceded by cyanosis, and (3) shock and collapse.

Nausea is caused by (1) fluctuation of the anæsthetic; that is, changing mixtures of gas too suddenly, thus changing the blood supply to the stomach; digestion is stopped, and nausea is the result. (2) Allowing blood and mucus to pass into the stomach while the patient is under the anæsthetic.

Nausea can always be detected by the greenish color of the patient. As soon as it is noticed, preventive measures should be employed, otherwise vomiting will result. Immediately remove the inhaler and allow the patient to waken. As soon as he can open his eyes lean him gently forward, his hands thrown over the sides of the chair and knees pressed closely together; lower the head as far as possible, forcing the body downward so that the knees compress the stomach, causing the patient to belch. Also have the patient inhale aromatic ammonia.

If the patient does vomit while asleep, throw his body over the arm of the dental chair, having the arm directly under the region of the stomach, lowering his head as much as possible, and slap him vigorously on the back. This will expel the vomitus from the throat and mouth, and will force the tongue forward. As soon as the patient is able to expectorate restore him to sitting position. Have him wash his mouth and retire.

It is seldom necessary to employ resuscitating agents during nitrous oxid administration. It is, however, important that everyone using this form of anæsthesia should have some knowledge of resuscitation.

Before starting it is always advisable to have the proper agents ready. The Cook hypodermic outfit, consisting of two capsules of digitalin 1-100 gr., two capsules nitro-glycerin 1-100 gr., two strychnin sulphate 1-100 gr., put in 1 cc. capsules, is about the best obtainable.

It is generally assumed that the danger to a patient from asphyxia comes from swallowing the tongue. This rarely occurs. During cyanosis or asphyxia the tongue becomes enlarged with blood, and sometimes becomes swollen so that it falls back into the throat at its base, and thus causes a natural stoppage of the respiratory tract. As we look into the mouth there seems to be considerable room for expansion of the tongue. However, that part of the tongue that we see is only one-third of its size. Pulling on the tongue with tongue forceps only stretches the anterior third of it, and has no effect on the base, which is the cause of the trouble in asphyxiation.

The proper thing to do is to first see that the mouth is wide open, then a Lumbard airway or the first and second fingers can be inserted

down to the base of the tongue, pushing it forward, thus opening the respiratory tract.

In case a patient does not commence breathing, place the other hand below the diaphragm and directly on the stomach, and with a slow pressure upward the air will be expelled from the lungs. Release the pressure and allow the lungs to fill with air or oxygen; repeat this until natural respiration begins.

When employing oxygen for resuscitation, keep the inhaler on for the inhalation, then remove it and force the exhalation by pressing upward and back on the abdomen. Do not force the respiration too fast; the normal is twelve to the minute. By forcing the patient to exhale the air from the lungs for three seconds and then forcing oxygen back from the gas machine for two seconds, we devote five seconds to each complete respiration, which is normal for the average adult. As soon as respiration is maintained naturally the patient should be kept absolutely quiet and warm.

Shock and collapse are brought about by a sudden lack of muscular tone in the arteries by which the blood is allowed to filter through the artery walls into the tissue. Its symptoms are pallor, moist skin, muscular relaxation, feeble pulse and mental impairment. The causes are trauma, fright, anæsthesia, etc.

Intravenous injection of .002 gr. Alpha-Lobelin will promptly produce an increased frequency and amplitude of respiration. Alpha-Lobelin is a valuable resuscitative agent. In case the pulse becomes slow a quick stimulant can be given by injecting camphor in oil, strychnin sulphate, digitalin or nitro-glycerin over the jugular vein or in the hollow in front of the shoulder.

Some Essential Requirements



HIS year the Annual Oration of the Hunterian Society has been delivered by Sir George Newman, who took as his subject "The Private Practitioner as Pioneer in Preventive Medicine." The address has been published by the Oxford University Press, and is marked by the lucidity and charm of style for which its author is so well known. Hunter, Jenner, and a number of their eighteenth century contemporaries are described, and it is pointed out that these men, so famous for what they did, were all of them engaged in private practice. It was shown how they laid the foundations of modern preventive medicine, and how they contributed to the position of the private practitioner to-day, as a most important factor in the administration and development of medicine in its preventive aspect. It is pointed out that the system of public health administration now enables the practitioner himself to "become a direct agent

in working for the health of the community as well as the individual," and "to interpret the purpose of preventive medicine not merely as the negation of disease, but as attaining the highest possible standard of personal health, resistance and capacity of body and mind." Some of the concluding words of the oration run thus: "The ideal of medicine is by prevention to defeat disease and lengthen man's days, but still more is the ultimate aim to emancipate the imprisoned splendors of the human spirit, and furnish a larger degree of happiness, contentment and capacity."

Now we are assured by the highest authorities, and indeed it has become almost a commonplace, that dentistry plays a very important part in preventive medicine. If that is true, then the practitioner of dentistry undertakes a role, the nature of which is worth considering from time to time. It may, for one thing, be asked how far the practitioner himself does habitually think of his calling as being on so high a plane, and how far the admitted drawbacks to a dentist's work are compensated, for him, by the consideration that he is an integral part of a great system, having for its aim the advancement of human health and happiness. The individual may further ask himself whether in his daily practice he makes as much as he might do of the creed which asserts that his function is not only curative, but preventive. Besides remedying the ravages of disease, as they are presented to him, does he make it his constant aim to prevent, so far as possible, those ravages from actually occurring, both by his own skill opportunely applied, and by the persistent and emphatic inculcation of the "stitch in time" argument, especially in the case of children and adolescents?

There may be said to be two ways of looking at the work of a dental surgeon. There is the purely mechanical patchwork job of the man who considers that he has done all he is called upon to do, if he restores comfort and function by his treatment of this or that diseased tooth to which his attention may be called, by its removal if it is too far gone for treatment, and by the substitution of artificial in the place of the natural teeth he has extracted, without paying any further regard to the welfare of the mouth as a whole, and still less to the influence of the oral cavity as it must affect, for good or evil, the bodily system as a whole. On the other hand there is the career of the man who sets out to take charge of a case, with the definite idea in his mind, if he wins the confidence of, and is given a free hand by his patient—not only of curing such present ills as may exist, but of guarding against future trouble by early preventive treatment, by regular periodical inspection, and, further, by making his treatment always dependent on what may be clearly for the good of the general health, as well as for any particular tooth or group of teeth.—*Editorial, British Dental Journal.*

Dentistry One Hundred Years Ago

EXTRACTS FROM "PRINCIPLES OF DENTAL SURGERY," BY
LEONARD KOECKER: PUBLISHED BY THOMAS AND GEORGE
UNDERWOOD, LONDON, IN THE YEAR 1826.

[Read this article and then ask yourself: How much has dentistry progressed in one hundred years? You will be surprised, possibly disappointed, and we hope stimulated. The need of the dental profession to-day is the scientific method of observation and study. We cannot progress much further "in general terms." We must solve particular problems, that we may know with greater certainty whether to answer yes or no to those embarrassing questions: Is there infection in this tooth or the surrounding tissues? Should the condition be treated or the tooth extracted? How should the root canal be filled? How can dental disease be prevented, and why does one tooth decay and not another? These questions can be satisfactorily answered only through further study and research.—Editor.]



DENTAL surgery, as hitherto practised, may be considered as being chiefly founded on empiricism; and while it is doing but common justice to the merits of Hunter, Fox, and Blake, to acknowledge that in respect to the natural history, anatomy, and physiology of the teeth, very great advances have been made within a few years, it must, however, be acknowledged that little or nothing has been done by any of those authors, or by any other writer who has yet appeared, for the pathology and practice of this interesting art.

In fact, the present practice of dental surgery at the best is only palliative; it is hardly ever curative, and still less does it operate seasonably as a preventive.

If many diseases present themselves in the case of the same individual, the usual practice is to attend to some one or more of them exclusively, leaving the others to continue their ravages without check or interference. By this procedure, the good effects of incomplete operations, however perfect for their special purposes, are always frustrated in the sequel: for whenever the causes of a disease are not removed, the disease itself is sure to return; and, besides this, it frequently happens that new maladies and causes of other diseases are produced by such untimely and injudicious operations, by which, indeed, the ravages of every previously existing disease are greatly aggravated. In fact, this course of partial treatment, which is now so common, is exactly calculated to keep the patient continually under the hands of a dentist, whose proceedings, year after year, are either useless or positively pernicious, until the unfortunate

sufferer at length, after losing his teeth, loses also his patience, and refuses any longer to be the subject of unprofitable experiments and palliatives, or resolves to resort to the restorative means in the hands of the mechanical dentist, by far more injurious and destructive than the former.

Where errors so greatly affecting the health, happiness, and even the life of a human creature, are the result, as they frequently are, of an unpardonable ignorance of the most common principles of medicine and surgery, they call for unqualified reprobation. Indeed, I do not scruple to say, that any man who pretends to practise this art without a better acquaintance with surgery and medicine than is generally deemed necessary, ought to be made deeply responsible for the consequences of his presumption.

We often find that very irritating operations have been performed for the cure of the disorder of some particular teeth; while either the gums, the alveoli, or the periosteum, or the parts of the mouth generally, were in a state of inflammation or suppuration, and, perhaps, at the very time when diseases of these parts were the exciting causes of the diseases in the teeth; a proceeding, indeed, against all sound surgical principles, and, to say the least of it, not likely to be attended with very substantial advantage to the patient.

But one of the greatest, and probably one of the most mischievous, errors, even among dentists of some celebrity, is the common practice of inserting artificial teeth before the mouth has been properly prepared for their reception by being brought into a healthy state.

The effects of all the important operations in dental surgery are never passive, but always active in their consequence; they must either assist Nature in preserving, or combine with the causes of disease as a most powerful auxiliary in destroying, the health and life of the parts.

Operations on the teeth, with few exceptions, require as much skill, and involve as much difficulty in their performance, as any of the most important operations of general surgery; an assertion which I trust I may be allowed to make, without detracting from the pre-eminent merits of that excellent art: but the mechanical part even of dentistry, although far from forming one of its most difficult, or most important departments, is much more complicated and subordinate to pathological judgment, than that of any other branch of general surgery. In treating hereafter, at some length, of a few of the most important and most common operations of dental surgery, viz.: the extraction of teeth, on stopping carious teeth, and so forth, I trust I shall have it in my power to give satisfactory and convincing proofs to the attentive reader of the truth of this assertion; and that I shall be able to establish the fact, that the operative part of dental surgery forms a much more important and more extensive branch of the healing art, and that its practice is attended with much more difficulty, than what I believe to be the general opinion.

The truth is, that in order to make our common profession respected, we want nothing but that union and co-operation among ourselves, which has made surgery and medicine so respectable. The effect of such a cordial co-operation among its intelligent and justly respectable members, each contributing his utmost to the general stock of experience, would soon demonstrate the difference between science and quackery, sound practical knowledge and pretension, so clearly that the very multitude would be capable of distinguishing the empiric from the well-informed practitioner.

But as soon as the respectable professors of this art shall begin to communicate more freely to each other, and to the world, the fruits of their experience, it will be proved that this business is capable of systematic arrangement; and that it has two great and important objects in view, both of which it will then more easily and with more certainty accomplish: namely, first, the cure of the diseases of the mouth, and the prevention of the recurrence of them; and, secondly, so to operate by an early suitable attention to the teeth, particularly those of children, as to prevent, in a great measure, the necessity of much curative treatment in the afterpart of life.

The objects, therefore, are cure and prevention. For a time, the curative remedies will be more in request, because of the extreme imperfection of the art, and from the great difficulty of eradicating from the mind of the public those erroneous prejudices which exist in favor of the old and long adopted practice, and of making them sufficiently well acquainted with the superiority of any new methods. But in proportion as a sound practical knowledge is more generally diffused amongst the liberal and scientific professors of the art, and sought for by the public at large, in that proportion, it is to be hoped, will the preventive remedies become more generally and justly valued.

GENERAL PRINCIPLES OF DENTAL SURGERY.

Dental surgery is the science of preventing and curing the diseases and of preserving the health and beauty of the teeth and of the parts connected with them; including also the judicious remedial treatment of defects or loss of parts injurious to health, general appearance, and to the power of distinct articulation. The practice of this very useful art should be founded on a solid basis. On such principles as are the result of repeated observations, and carefully and deliberately examined facts of a thorough acquaintance with the present state of dental surgery, with the theories and modes generally adopted for its practice, and an attentive and minute examination of their good and bad effects; followed by a total rejection of all false and pernicious theories and practices, by corrections and improvements made upon such as are defective, and the addition of such as are wanting.

To obtain this important object, the following materials are indispensably necessary, and require the most attentive consideration, viz.: a minute as well as comprehensive knowledge:

First—Of the natural history of the teeth and their relative parts: that is, of the gradual formation, and various structures and functions, at different periods of life, of the teeth, the gums, the sockets, the periosteum, and jaw bones in their healthy state.

Second—Of the different diseases to which the teeth and their relative parts are subjected, their symptoms, together with their remote as well as proximate causes, at the different periods and stages of their formation and structure.

Third—Of the connections, sympathies, and influences of the teeth, the gums, the sockets, the periosteum, and the maxillary bones, generally and individually, one upon another in their sound and morbid state; and particularly those of the first set upon the permanent teeth.

Fourth—Of the influences and effects of those parts in their healthy and diseased states, as well as of those of the whole constitution when in health, or when laboring under any general or local disorder upon the teeth, and the other parts immediately connected with them, at different periods of their formation and structure.

Fifth—Of the various medical and surgical remedies which the art affords; their judicious exhibition, and the opposite effects produced, as well immediately as permanently, by the application of skilful or improper treatment.

Sixth—Of the surgical apparatus and mechanical means for the proper application of the above remedies and operations in dental surgery, added to a general scientific knowledge of mechanism, and the various collateral mechanical arts intimately connected with its practice.

The Modern Dental Assistant

FLORENCE A. COOK, TORONTO.



WITH the increasing appreciation of the need for dental service, the dentist desires to be in a position to concentrate his efforts on the essentials to which he must give his personal attention. In this country, of course, all operations in the mouth of the patient must be performed by the dentist, but there are numerous details connected with the carrying on of an office which may be assigned to others. A good while ago the dentist discovered that a young woman could be of assistance, and at first felt satisfied if she answered the telephone, and other enquiries, and kept the office

in order. Gradually he learned that she could help him in other ways, and he undertook to give her some training that she might be of greater assistance to him. A course was started in 1919, by the Royal College of Dental Surgeons, to train young women as dental nurses, and, with the knowledge and practical experience gained in the Faculty of Dentistry, the graduate dental nurse can readily adapt herself to the needs of the individual dentist.

The duties of the modern dental nurse are interesting and varied. She acts as hostess in the office and learns to judge the numerous types of patients. She knows that the busy business man desires prompt service only, but that some women prefer that you take a kindly interest in any of their affairs they choose to discuss. The personal element is an important factor with the patient in his selection of a dentist, and the dental nurse can help considerably in retaining and increasing his practice by discreet attention. The dental nurse guards the sterilizer, cares for the instruments, arranging them conveniently, and may assist in the laboratory. When the dentist desires, she gives him assistance at the chair, anticipates his wants and adds to the comfort of the patient.

The woman patient and the children practically demand the presence of a young woman as a dental assistant. It makes them feel more comfortable, and she can often do considerable in keeping the child in a mental attitude which will facilitate the service by the dentist.

Looking after the accounts is a part of office routine which is well relegated to the dental nurse, and with supervision, the dentist can also be relieved of correspondence, by having his letters typewritten. There are many other details which constantly arise, which the dental nurse can attend to, and thus conserve the time of the dentist—his one great asset.

The course in Toronto has been improved from year to year with a view to training young women, as well as possible during the time of the course (eight months), to meet the needs of the modern office. This year the course has been strengthened in the Prosthetic branch and the nurses are given a fairly good training in the Prosthetic Laboratory. It is expected that this will result in an increased demand for their services. Members of the profession considering the employment of a dental nurse are invited to correspond with the Dean, Faculty of Dentistry, University of Toronto. There are twelve young women in the class and they will be available for service in May.

Sloth makes all things difficult, but industry all things easy.—*Benjamin Franklin*.

Thirteenth Biennial Convention, Canadian Dental Association

HALIFAX, NOVA SCOTIA, AUGUST 16-17-18-19, 1926.

(The following information has been compiled to take the place of the booklet previously mentioned in the magazines.)

WHERE THE MEETINGS WILL BE HELD.

 HE various sessions of the Convention will be held in the Science and Gymnasium buildings of Dalhousie University, on the Studley Campus, Coburg Road. Registration will be in the Gymnasium building. The Convention buildings are about one mile from the hotels, and are very accessible by taxi or by either a "Belt Line" or "North West Arm" street car. Ample parking space is available for those who come by car.

HOW TO REACH HALIFAX.

RAIL.—Two routes are available from Montreal: 1. By the C.P.R. through Quebec, Northern Maine and New Brunswick to St. John, then either by C.N.R. by rail via Moncton on through cars, or by bus to Digby, N.S., then by C.P.R. through the famous Annapolis Valley route.

2. By the C.N.R., either by the Maritime Express leaving Montreal in the morning, or by the Ocean Limited in the evening. The latter makes the trip in about 26 hours, and passes through the beautiful Capatapedia Valley in daylight. The Maritime Express takes a couple of hours longer and makes the run along the St. Lawrence and past the Antamar Marshes, N.S., in daylight. It is expected that both of these trains will be equipped with radio and library car service. For those coming from New York or Boston there is through sleeping car service by the Boston and Maine railway.

WATER.—By an overnight trip from Boston to Yarmouth, six nights a week. No boat from Boston on Saturday night. It is also expected that there will be a C.N.R. boat service from Portland. The water service previously advertised from Quebec to Halifax down the St. Lawrence is no longer available, due to cancellation of the service by the shipping company.

ROAD.—Splendid trunk roads are available, and different routes may be chosen coming and returning.

From Montreal, the Canadian route recommended is via Quebec, Moncton, Fredericton, St. John, Moncton, Amherst, Parrsboro, and Halifax. This route is over good roads all the way, and passes

through stretches of beautiful country, among which might be mentioned the trip along the St. Lawrence and St. John River valleys, and along the north shore of the Minas Basin, in Nova Scotia. It gives an opportunity to see the famous Tidal Bore on the head waters of the Bay of Fundy.

1a. An alternate route from St. John is by boat to Digby, then road to Halifax through the Annapolis Valley. This gives an opportunity to see Annapolis and the Evangeline country around Wolfville.

2. Another route is through the United States, passing through White and Green Mountains to Boston, then by boat to Yarmouth. From Yarmouth to Halifax two routes are available: By the South Shore road, or through the Annapolis Valley. Both routes pass through delightful country.

2a. An alternate route is to St. John, then by boat or road as outlined above. This gives an opportunity to see the famous Revers Falls at St. John.

VACATION TRIPS IN THE MARITIMES.

The delightful climate of the Maritimes offers many attractions in summer months, especially for those who live far from the sea, and many attractive trips may be planned. Not only are there trips which can be taken to the seaside, but each of the Maritime Provinces is rich in the traditions and landmarks of the early history of Canada. Port Royal, or Annapolis as it is called to-day, situated at one end of the Annapolis Valley, is the second oldest town in North America. It was founded before Quebec and Jamestown, and several years before the Mayflower anchored off Cape Cod. The old fort, around which French and English struggled for mastery, still stands, and is well worth a visit. Then, at the other end of the Annapolis Valley, are Kentville and Wolfville, only seventy miles by good road from Halifax, and on one of the main routes from the other parts of Canada. These towns are in the centre of the country immortalized by Longfellow's "Evangeline." They form the centre for a number of short automobile trips to the Gaspereau Valley on the one side, and on the other to the scenes mentioned in "Evangeline," the village of Grand Pré, the memorial church erected to commemorate the history of the Acadians, and off in the distance the bluffs of Blomidon.

The South Shore trail passes through a series of picturesque fishing villages and flourishing towns. From these ports sailed the clipper ships which made the name of Nova Scotia famous in the heyday of the sailing ship. Here we pass through Lunenburg, the Gloucester of Canada; past Mahone Bay, with its island for every day in the year; and Oak Island, where so many attempts have been made to find the treasure of Captain Kidd.

Halifax, founded in 1749 as a base for the British fleet and military headquarters for North America, is rich in the history of the British campaign in North America. The harbor is strongly fortified, but the only fort which visitors can enter is on the Citadel Hill, which towers in the centre of Halifax. Under the shelter of these forts men and ships have gathered to fight in some of the most decisive battles of the Empire. Here the convoys assembled before crossing the Atlantic during the Great War. Besides the points of historic interest there are several short motor drives, especially around the Northwest Arm, and around the Bedford Basin and past the Dartmouth Lakes.

Where a few extra days are available, a side trip to Prince Edward Island, crossing either at Borden or Pictou, may be taken. Another trip which would require three or four days extra is to Cape Breton, where the Bras d'Or Lakes and the Margaree Valley offer some of the best scenery in Eastern Canada.

Numerous booklets are available which give more complete information, and these will gladly be sent on request.

Distances, by road:

	Miles.
Toronto to Montreal	354
Montreal to Quebec	187
Quebec to Halifax	744
St. John to Halifax	292
Moncton to Halifax	200
Halifax to Kentville	70
Kentville to Digby	80
Digby to Yarmouth	65
Boston to New York	236
New York to Philadelphia	98
St. John to Boston	500

Ferry Fares:

St. John to Digby: Car, \$10.00, \$12.50, \$15.00 (depending on size of car); passenger, \$2.30.

Boston to Yarmouth: Car, minimum, \$15.00, then \$1.00 per cwt. for cars over 15 cwt.; passenger, \$9.10.

Fortmentine, N.B., to Borden, P.E.I.: Car, \$4.00; passenger, 35c.

Pictou to Charlottetown: Car, \$5.00, \$6.00; passenger, \$3.00.

Railway Fares:

	C.P.R.	C.N.R.
From Ottawa to Halifax	\$25.45	\$25.50
" Toronto	33.20	33.20
" Montreal	21.60	21.60
	(Pullman, \$6.55)	
" Quebec		18.25
" St. John	8.80	8.80

The above are sample single fares; return fares are not quoted, it is expected that a certificate plan will be in force, announcement which will be made later.

ENTERTAINMENT AND PROGRAMME.

This article is being written the end of April and is only complete to that date, as many arrangements still remain to be made. A glance at the following list of essayists and clinicians will be sufficient to show that plans are in course of preparation which will give opportunities of seeing and hearing one of the best programmes ever offered in Canada.

Operative Section—Dr. H. J. Baker, Boston, paper and clinics on "Amalgam"; Dr. A. E. Webster, Toronto, paper or clinic; Dr. T. Hinman, Atlanta, Georgia, paper, "The Present Status of the Pulpal Tooth"; Dr. T. P. Hyatt, paper, "An Operative Procedure for Preventive Dentistry"; Dr. E. A. Lieban, New York, paper on "Root Canal Treatment," and Dr. W. D. Tracy, paper and clinic on "Gold Inlays."

Prosthetic Section—Dr. W. E. Cummer, Toronto, clinics on "Partial Dentures"; Dr. W. H. Hoyt, Boston, clinic, "Full Denture Construction"; Dr. Biley Smith, Philadelphia, clinics on the "Worth Articulator."

Crown and Bridge and Ceramics—Dr. I. H. Ante, Toronto, and Dr. W. G. Bridge, Boston, clinics.

Local Anæsthesia and Radiology—Dr. W. B. Amy, Toronto, clinics, "Local Anæsthesia"; and Dr. Herman A. Osgood, Boston, paper and clinics on "X-ray Diagnosis and Technique."

Orthodontia—Paper prepared by Dr. Lowe Young, New York, and paper by Dr. Corrigan, Toronto.

Periodontia Section—Dr. D. P. Mowry, paper and clinic, "Periodontia and the General Practitioner."

Education, Public Health and National Canadian Dentistry—Dr. W. Seccombe, Toronto; Dr. A. W. Thornton, Montreal; Dr. F. Conboy and Dr. H. S. Thomson, Toronto; and Dr. Anna Hughes, New York.

It will be seen from the above that the educational part of the programme is featuring the clinical side. All the essayists and clinicians have been asked to plan their material for the general practitioner. The names of these men are so well known in dentistry that it seems almost superfluous to do more than mention them. Drs. W. Seccombe, A. Webster, W. E. Cummer, I. H. Ante and W. B. Amy are all presently connected with Toronto University Dental Faculty; Dr. F. Conboy, of the Ontario Department of Health; Dr. Harry S. Th

on, of the Canadian Oral Prophylactic Association; and Drs. A. W. Thornton and D. P. Mowry, of McGill, are also too well known for their contributions to Canadian dentistry to require more than brief mention. Drs. H. J. Baker, W. H. Hoyt and W. G. Bridge are all on the staff of Tuft's Dental College, and have given numerous clinics through the New England States. Dr. J. Lowe Young and Dr. Corrigan are "household" names to orthodontists, and they are planning to have something to interest the general practitioner rather than the specialist. Dr. T. P. Hyatt, of the Metropolitan Life Insurance Company, is one of the most prominent of those interested in the Operative phase of Preventive Dentistry. Dr. Anna Hughes, of Columbia University, is also keenly interested in Preventive Dentistry and the Oral Hygienist movement. Dr. W. D. Tracy is one of the best-known gold lay workers. Dr. T. P. Hinman is a Canadian who has been President of the Southern Section of the American Dental Association, and one of the most prominent dentists in the United States. Dr. Lieban, of New York, and Dr. Biley Smith both go direct from Halifax to take part in the International Convention. Dr. Herman Osgood has lately published an outstanding text in x-ray interpretation, and was one of the clinicians at the Montreal Clinic Club last fall.

Besides this feature of the programme, it is hoped that progress can be made in the revision of the Constitution as discussed at the Vancouver meeting, and the question of making the C.D.A. national in aspect will be up for discussion. This part of the programme will be built around the slogan which has been suggested: "Canadian Dentistry United for Public Service."

Halifax offers many facilities for entertainment, and those who bring along their golf clubs will find plenty of opportunity to use them. There are two 18-hole and one 9-hole course within easy distance of the Convention. Two cups, besides other prizes, have already been put up, and arrangements are now under way for competitions. The Royal Nova Scotia Yacht Squadron is justly famous, and it is planned to have an excursion on the harbor, which will end with an informal dance and tea at the Squadron Club House. Some time during the first day there will be a hodge podge on the Studley grounds, which is designed particularly to give the members a chance to get acquainted. The Halifax Public Gardens have always received very high praise, and it is planned to have a band concert there on one evening. The meetings are being held within a few minutes of the North West Arm, which offers facilities for all kinds of water sports. Besides these, other arrangements are going steadily ahead for the separate entertainment of the ladies.

ACCOMMODATION.

The following hotels are available:

The Halifax (American Plan)	Rate, \$5.50 up.
The Queen	5.00 up.
The Carleton	4.00 up.

Besides these hotels there are a number of smaller and very comfortable residential hotels, including the "Elmwood" and "Hillside Hall," at \$3.50 per day.

In addition to this accommodation there are two large University residences which are situated on the North West Arm and very convenient to the buildings where the meetings are to be held. These can be opened if necessary.

EXHIBITS.

The exhibits will all be placed together in the Gymnasium, where they will be very convenient. A large number of prominent firms have already requested space, and over a hundred and fifty lineal feet have been contracted for.

INFORMATION BUREAU.

An information bureau, with telephone, will be open in the Gymnasium during the whole time of the Convention.

TRIP TO PHILADELPHIA.

Those who wish to attend the International Convention at Philadelphia can leave Halifax at about 8 a.m. and be in Philadelphia about six the following evening. Rail all the way, \$36.41, or by Yarmouth and Boston, \$28.50. For those who are travelling by auto, it is possible to reach Philadelphia on Sunday by leaving Halifax Thursday evening, after the meeting, or early Friday morning.

LOCAL COMMITTEES.

Programme—Dr. W. C. Oxner, chairman; Dr. J. H. Rice, Dr. W. W. Woodbury.

Exhibits—Dr. Karl Woodbury, chairman; Dr. C. B. Climo, Dr. H. S. Crosby, Dr. G. N. Stults, Dr. E. S. Millet, Dr. R. C. Crosby.

Publicity—Dr. F. W. Johnson, chairman; Dr. F. W. Stevens, Dr. S. G. Ritchie, Dr. W. H. S. Gray, Dr. G. A. Chudleigh, Dr. C. D. Desbrisay, Dr. H. C. MacDonald.

Committee on Arrangements—Dr. G. K. Thomson, chairman; Dr. G. R. Hennigar, Dr. A. W. Faulkner, Dr. W. W. Woodbury, Dr. W. H. H. Beckwith, Dr. S. G. Ritchie, Dr. J. Stanley Bagnall secretary.

Entertainment—Dr. W. H. H. Beckwith, chairman; Dr. Leo

Fluck, Dr. F. W. Stevens, Dr. K. Woodbury, Dr. H. S. Tolson, Dr. L. M. Baxter, Dr. C. E. McLaughlin, Dr. A. W. Cogswell, Dr. G. H. Fluck.

We Urge You to Make Your Hotel Reservations Early.
It will help the local committees very much if you will fill in and forward the information asked below.

TO DR. J. STANLEY BAGNALL, SECRETARY C.D.A.,
34 LARCH ST., HALIFAX, N.S.

I am planning to attend the C.D.A. Convention in Halifax in August, and am specially interested in the following clinics.

.....
In the event of the University Residences being used, I would like to secure a room there. would not

I would like further information on the following.

.....
Name
Address
.....

See Canada First

HE Canadian Dental Association 1926 meeting will be held in Halifax, N.S., 16th-19th August.

A rail and water tour of Eastern Canada has been planned and the following itinerary, with rates and schedule, will be the official route. On the return trip there are a number of routes marked with rates and these should be chosen before starting. The excursion will leave Toronto by the steamer Toronto, of the Canada Steamship Lines, for Kingston, the Thousand Islands and the rapids to Montreal.

Schedule of Trip.			Going Journey.		
Leave Toronto		3.00 P.M.	Sunday,	Aug.	8th.
Arrive Montreal		5.45 P.M.	Monday,	Aug.	9th.
Leave Montreal		6.35 P.M.	Monday,	Aug.	9th.
Arrive Saguenay		9.30 P.M.	Tuesday,	Aug.	10th.
Leave Saguenay		6.30 A.M.	Wednesday,	Aug.	11th.
Arrive Quebec		7.30 P.M.	Wednesday,	Aug.	11th.
Leave Quebec		12.05 A.M.	Friday,	Aug.	13th.
Arrive Halifax		10.50 P.M.	Friday,	Aug.	13th.
(Standard Time.)					



Steamer Shooting Lachine Rapids

Rates.

Route 1. Toronto to Halifax and return, steamer from Toronto to the Saguenay and return to Quebec, rail to Halifax, thence rail to Digby, steamer to St. John, rail to Quebec (via Moncton or Fredericton), steamer to Montreal, rail to Brockville and steamer to Toronto.

\$114.90 including meals and berth on Can. S.S. Lines.

\$13.10, cos. of lower berth, Quebec to Halifax and return.

Route 2. Same as route 1, on going journey, and on the return as far as St. John, thence rail direct to Montreal, rail to Brockville, and steamer to Toronto.

\$117.45, including meals and berth on Can. S.S. Lines.

\$6.55 for lower berth, Quebec to Halifax.

\$4.80 for lower berth, St. John to Montreal.

Route 3. Same as route 1 on going journey, thence rail to Yarmouth, steamer to Boston, steamer to New York, steamer to Albany, rail to Montreal, rail to Brockville, and steamer to Toronto.

\$126.02, including meals and berth on Can. S.S. Lines.

\$6.55 for lower berth, Quebec to Halifax.

\$3.00 to \$6.00 for rooms, Yarmouth to Boston.

\$1.75 to \$10.00 for rooms, Boston to New York.

\$3.75 for lower berth, Albany to Montreal.

Route 4. Same as route 1 on going journey, thence rail to Yarmouth, steamer to Boston, steamer to New York, and rail to Toronto.

\$114.42, including meals and berth on Can. S.S. Lines.

\$6.55 for lower berth, Quebec to Halifax.

\$3.00 to \$6.00 for room, Yarmouth to Boston.

\$1.75 to \$10.00 for room, Boston to New York.

\$4.50 for lower berth, New York to Toronto.

Route 5. Same as route 1 on going journey, thence rail to Yarmouth, steamer to Boston, rail to New York and rail direct to Toronto.

\$115.32, including meals and berth on Can. S.S. Lines.

\$6.55 for lower berth, Quebec to Halifax.

\$3.00 to \$6.00 for room, Yarmouth to Boston.

\$4.50 lower berth, New York to Toronto.

Route 6. Same as route 1 on going journey, thence rail to Yarmouth, steamer to Boston, rail to Philadelphia and rail direct to Toronto.

\$119.25, including meals and berth on Canada S.S. Lines.

\$6.55 lower berth to Halifax.

\$3.00 to \$6.00 for room, Yarmouth to Boston.

\$4.50 lower berth, Philadelphia to Toronto.

A group of dentists on an excursion of this kind will become better acquainted and enjoy the pleasure of congenial company. To visit the home of self-government—for it was in Halifax, in the year 1758, was convened the first representative assembly to govern in the British Empire overseas—is worth while for any Canadian. A motor trip through the land of Evangeline and the Annapolis Valley from Halifax will be both interesting and educational. Any further information may be had from

C. ANGUS KENNEDY.
86 Bloor St. W., Toronto.

Focal Infection and Research by the Dental Board of the United Kingdom

N application for a grant was received by the Research Committee of the Dental Board of the United Kingdom from Messrs. R. A. Broderick, H. Round and Harvey Wyatt to study the association of gastric ulcer and oral sepsis. They proposed to attempt to reproduce gastric lesions in rabbits by inoculation of cultures from patients with gastric ulcer associated with oral sepsis. In other words, this research was intended to repeat Rosenow's theory of elective localization of bacteria and to test its validity. It is somewhat surprising that the Board, after consultation with the Dental Committee of the Medical Research Council, refused the grant on the grounds that the work did not appear "primarily to be concerned with dental research." Rosenow's views have attracted wide attention both in America and here, and it seems highly desirable that his experiments should be repeated in this country. It is true that their significance is not limited to dental sepsis, but it is chiefly in connection with infection from the teeth that Rosenow's theory is discussed. It has so important a bearing on focal infection that we cannot understand the attitude which would deny to such an investigation as that proposed by Broderick and his fellow-workers the right to be considered as a piece of dental research.

It is sure that all the various researches will not be equally fruitful, but it is certain that dental science will gain much from these investigations which cover so wide a field. Without the financial encouragement of the Dental Board many of these investigations could not have been commenced. Though many dentists have grumbled at the imposition of an annual fee by the Board, yet the fact that the revenue so obtained has enabled the Board to subsidize research on a scale never before approached in the dental profession in this country should reconcile them to this small recurrent obligation.—*Lancet*.

European Dentists in India

BY GEORGE CECIL, PARIS, FRANCE.

THE COLOR LINE.



IN comparison with the number of white and native inhabitants India possesses but few European dentists. There are, all told some twenty practitioners who, hoping to better themselves have left Great Britain for the East, while America is represented by three dental surgeons, one of whom states that after twenty four years' incessant work he still has to make his fortune. To half-caste dentists there is no limit, the Calcutta dental school turning out a number every year. They, however, are not considered as Europeans, a circumstance which grieves them considerably, especially as for many a decade champions of the Eurasian cause have labored hard to remove the color stigma. Incidentally some of these half-caste dentists are thoroughly reliable, their bridge-work being excellent and lasting. Meanwhile, the much-prized title, "European *Sahib*," is not for them.

The roll of white practitioners may increase, for the well-to-do native is becoming more inclined than he was some years ago to face an operation, and, happily for the exiled dental surgeon, both Hindu and Mahometan prefer the ministrations of the European to those of his own countrymen. Whereas the man of substance formerly cured raging pain in the jaw by having the offending tooth drawn (literally "drawn") by the nearest colored doctor, he now submits it to the qualified *dant wallah*, and demands a filling or a gold crown. Nor is the patient satisfied with a half-caste, or Parsee, dentist—a "European *Sahib*" alone meets his needs. And, strangely enough, the man who is just "out from Home" is most in request with him, even though the last-named, being young, lacks experience. "He must be fresh out from England," declares the possessor of the *rupees*.

Some natives are a regular source of revenue to the dental surgeon who often is specially retained to overhaul the patient's mouth every six months. There may not be much the matter with the teeth, but it pleases the Aryan to pay these periodical visits. Should the wealthy Indian live many a mile from the surgery, the dentist must wait upon him, a rather inconvenient arrangement for the man with a large town practice. Luckily, he is well paid for his trouble.

AN UNFULFILLED PROMISE.

All rich natives are not to be trusted. The opulent Rajah who spends thousands of dollars in entertaining the Viceroy thinks nothing

of keeping the *dant wallah* waiting two or three years before paying him a comparatively trifling fee of fifteen hundred dollars for a week's attendance at the palace and a plate. "My car will bring you from Bombay to my country house, where you will live, in a suite of rooms, at my expense. I undertake to pay you a hundred dollars a day; and should you find it necessary to make me a plate, you have but to charge what you consider proper." Thus reads the type-written communication despatched by the potentate, and the recipient gladly avails himself of an opportunity to earn a substantial cheque. He remains a few days, filling, extracting, or scaling the teeth of the great man and those of his family. A cast is taken of the Rajah's mouth, and, on the expert returning to Bombay, the plate is made. Then comes a return visit to the lordly patron, who expresses his delight at possessing such astonishingly natural teeth. "Send in your account," he commands. "It will be settled by return."

The days go by, and no cheque arrives. Weeks pass without the Rajah even replying to temperately-worded reminders, till the dentist begins to wonder if his patron is as rich as he is said to be. After waiting twelve weary months the creditor writes His Highness to the effect that further delay will result in a complaint being made to the Viceroy, of whom every colored prince and princeling secretly goes in dread. The Indian dignitary pays, and the dental surgeon congratulates himself on not having lost more than the interest on his *rupees*.

Sometimes the practitioner declines to deliver the plate till the stipulated fee has been paid. The native, anxious to have a presentable mouth, yields to pressure, and money changes hands, though not without an exchange of ideas on the subject. "Anything rather than be kept waiting," argues the man who has made the plate.

A "FLAT" RATE.

Some dentists follow a custom which has obtained for a number of years, that of charging the same fee whatever the work may be. Whether a tooth is extracted, scaled, filled, or merely rubbed to remove tobacco stains, a "flat" rate (usually eight dollars) covers the obligation. The system is manifestly absurd, since it means charging the same fee for an extraction (a matter of five minutes from the time the injection is made till the patient leaves the surgery) as for filling a tooth—an operation which, if much preparation is necessary, may take an hour, and longer. The older men cling to this extraordinary practice, which has been handed down from dentist to dentist during the fleeting years. Their younger *confreres* generally fix the fee at ten or twelve dollars an hour; but if a patient is known to be none too well off they generously make a reduction. A double plate, half gold and half vulcanite, costs from a hundred to a hundred and fifty dollars, if every tooth has to be

replaced, the actual profit being about a hundred per cent. The dental surgeon often is bitterly reproached for charging so high a price, the patient accusing him of profiteering. The exiled practitioner mildly replies: "Like yourself, I am not in the East for the good of my health." Nor does any other white man live in India from choice; those who face the abominable "hot weather" climate do so because they cannot earn a living in England; or, if they are in the army, because their regiment is relegated to an Indian "station." 'Tis a case of Hobson's choice.

Could the Eurasian and native dentists succeed in persuading the well-to-do Indian and Anglo-Indian community that colored people are as skilful as the European practitioners, they might reap a good harvest. Meanwhile, few have grave reason for complaint, since each is kept busy looking after his compatriots' teeth. The fees thus earned may not be high; but the patient usually pays without being subjected to the ignominy of a writ. As the native proverb says: "A little, and still a little, and much is one day accumulated."

A "COLD WEATHER" TOUR.

Those dental surgeons who make a living without "going on tour" are located—and more or less comfortably—in Calcutta, Bombay, Madras, Delhi (the new capital), Rawalpindi and Lahore. One elderly member of the profession, who, during twenty-three years' residence in India, has put by many *rupees*, sojourns in a cool mountain "station" halfway up the snow-capped Himalayas. Upon the "cold weather" setting in, he descends to the "plains," visiting towns and townlets where there is no resident white dentist, and staying at the traveller's "rest-house" should there be no hotel. The fortunate man (who can well afford to retire) has his regular provincial *clientele*, whose recommendations, by the way, prove invaluable. The peregrinating and much-travelled practitioner announces the coming visit by circularizing the local residents and by advertising his itinerary in the half-dozen Indian daily papers. Every moment of the visitor's busy day is occupied.

It is not worth the dentist's while to look in at the very small and recondite "stations," all of which are far off the beaten track. European officials, merchants, land agents, local dignitaries and planters, therefore, do as Mahomet did of old, when he found that the mountain would not come to him. They drive, or ride, should there be no railway communication, many a mile to the temporary surgery, putting up at a hospitable friend's bungalow. The fortunately-placed official is granted "leave of absence on urgent private affairs"; the humble man of commerce tears himself away from his struggling country-produce business, and devoutly trusts that the well-meaning native

work who has been left in charge will prove trustworthy. The "government servant" has no such qualms; he is on full pay all the time.

Sometimes a windfall comes the way of the travelling practitioner. Twenty-five years ago, for example, Abdur Rahman, Amir of Afghanistan, hearing that an American dentist was attending to the Europeans at Peshawar, on the Afghan frontier, commanded his services. Therepid man rode to Kabul (under escort), extracted two incisors, without an anæsthetic, His Highness being averse to gas, and received a fee of fifteen thousand dollars. The large sum was, however, well earned, for at that period no white man's life was safe in Afghanistan.

"NEEDS MUST."

The white sufferer who cannot seek the nearest European dental surgeon, time and distance rendering this course impossible, has two alternatives. He may either submit himself to the doubtful skill of the local "civil surgeon," who has not studied the anatomy of the jaw, or summon a *bazar* dentist, whose faith in the antiquated "key" instrument is unbounded. In either case the aching tooth eventually comes out; but as neither practitioner cares to administer anything in the way of an anæsthetic, the adventure is long remembered. In justice to the British doctor it must be admitted that he uses forceps, which are kept in a state of exemplary cleanliness. His Aryan *confrere* is less particular where hygiene is concerned.

If the European dentists of India seldom die rich, they at least can live on far less than in England. Those who pine to ride morning and evening may do so as frequently as they like, horse-flesh being cheap, while other luxuries are equally within their reach. The only thing which a modest purse cannot procure is a temperate climate all the year round.

Diet and Health

BY G. H. HEALD, M.D.

IN building a house we have a choice of various materials, any of which may be the best to use under some circumstances. For the roof, we may use shingles, tiles, slates or tin. For the walls we may use wood or brick, stone or concrete. For the floors, we may use wood or cement. For the frame, we may use wood or steel. And so on.

But we cannot build bodies in that way. The human body requires sixteen elements—oxygen, carbon, hydrogen, nitrogen, calcium ("lime")

phosphorus, and ten others, the first six constituting more than 98 per cent. of the body, the other ten less than two per cent., some of them showing the barest trace. However minute the quantity of an element that helps to constitute the body, it is needed, and its absence will be followed by serious disorders.

Iodine, for instance, is required in such minute quantity that for a long time its presence was not recognized in the body. But the body needs a continuous supply of minute quantities of this element, and if it is completely absent from food and drink, as is the case in many inland districts, the thyroid gland does not work properly, and goitre develops. If there is a lack of iron in the food, the blood is impoverished (anæmic). If lime and phosphorus are not properly assimilated, the bones are not properly formed, and rickets is the result. Not only must the food contain all the elements the body needs, but it must contain these elements in certain combinations. There must, for instance, be starches (or sugars) fats, proteins, water, and certain mineral compounds, beside minute quantities of protective substances called vitamins, found in milk, whole grains, fruits and green vegetables.

Such facts as these seem to make the problem of getting a full, balanced and adequate diet a formidable one, involving a knowledge of so much chemistry that no one but an accomplished chemist could know what and how to eat. Fortunately, this is not so. We do not have to go through an elaborate analysis and weighing of our food in order to select an adequate diet. Learned scientists have worked patiently for years over experiments that other people cannot well understand, and have shown that scurvy, the bane of sea voyages in olden days, is caused by the lack of certain vitamins. We do not need to know the composition of that vitamin, even the scientists do not know that. All we need to know is that if we have a sufficiency of the natural foods, including fresh vegetables, we will have an abundance of the vitamin that prevents scurvy.

The ordinary person can get along with very little knowledge of the chemistry of foods. All we need to know is that nature has provided ample foods, and that if we use these foods as nature gave them to us we shall not have any of the deficiency diseases. If we eat milk and fruits, grains, and vegetables in their natural condition, without any of the refining processes that remove some of the most important elements, we get in abundance all the body-building and body-maintaining substances, with the possible exception that those who live far inland and in the mountains may not get sufficient iodine for the needs of the body.

Much unsuitable feeding is due to eating foods that are over-refined and too concentrated. The more we refine our grains and sugars, the

more we remove the vital elements that go to build up stanch bodies capable of resisting disease. The more we eat of candies and pastries the less room we leave for the natural foods. Nature has adapted foods for our needs, more closely than any chemist or miller or cook can adapt them. This does not mean that we should live on raw, uncooked food, but it is a plea for more simplicity, for fewer complicated mixtures, for foods more nearly in their natural condition, for some fresh, uncooked food, if possible, at every meal.—*"Life and Health."*

The Young Man Who Felt Discouraged

 ONCE upon a time, there was a young man who felt that the world had treated him in a very shabby manner. He brooded over this until he felt that he must express himself in plain language or blow up. So one day after leaving the establishment where he was in the habit of spending fifteen cents every day for a club luncheon, he walked out upon the public highway and began soliloquizing aloud.

"Here am I," quoth he, "a young man of excellent parts and great ability, thoroughly conversant with every angle of this business, and yet I am receiving but a beggarly stipend which barely suffices to keep soul and body together.

"I must be at my desk every morning at eight o'clock promptly. If I stay out more than an hour at noon I am docked, whereas if I stay an hour late at night I am in no wise rewarded pecuniarily, nor is any laudatory mention made of my meritorious services.

"While I am fully competent to manage my department, I am kept in a humiliating and subordinate position. If I only had a chance I bet I would put some life into the dry bones of this old concern."

While he was thus holding discourse with himself he was much startled by hearing a voice close at his ear. "It's a very fine day," remarked the voice, which belonged to an old man whose approach had escaped our hero's notice.

The youth scowled and replied, "On the contrary, sir, it is a very unpleasant day." "Hoity-toity," said the old man, "Why should a youth like you be out of sorts with Nature, when she is in one of her most smiling moods?"

"It is not that I quarrel with Mother Nature," replied the young man; "but with my own hard luck, which does not permit of my enjoying any of the good things which life has to offer." "Indeed I may be able to give you some help as well as advice," was the elder

man's reply, "if you are willing to profit by them." "You might as well let me have it," answered the young man, "for I have already received so much advice that a little more will hardly do any great harm."

"Do you then truly wish to succeed?" inquired the old man. "I do so I can assuredly help you; for I have myself made a great success out of my life."

"You have been lucky, of course," said the youth ironically.

The old man smiled and replied very quietly, "Yes, I admit that I have been very fortunate."

"Then I doubt if your story will help me in any great degree," said the young man, "for luck is all dead against me."

The old man merely smiled at this and continued: "My first piece of good luck was in being forced to earn my own living at an early age, instead of being brought up in idleness and filled with the vicious notions that affect many of our present-day youngsters." Here he glanced sharply at the youth, who appeared not to notice it. Resuming his story, the old gentleman said: "I had long, hard hours, was at work from seven a.m. until all hours of the night, and allowed only thirty minutes off at noon. Thus I acquired the habit of work, which has since been invaluable to me."

"I was also lucky enough to be paid a very small salary, so that I was forced to live simply, and no doubt it was on this account that I saved money."

"I also stayed so long in each department that I learned the business thoroughly—which is very different from learning it rapidly."

"It naturally followed that when I advanced and my duties became less arduous I employed my leisure in reading books that were worth while."

"Thus, by the time I was twenty-eight or thirty I had a fair education and a sound business training, together with a little capital."

"But I fear I am boring you with this long tale, and the more so because I have not told you anything startling or novel. I cannot attribute my success to my own sagacity, but to the good fortune which made it necessary for me to overcome obstacles."

The discouraged young man made no reply. He turned on his heel abruptly and started back toward the office. He did not soliloquize as he walked, for he was occupied with a new sensation. He was thinking.—*The Merry Moulder.*

It may be no disgrace to be defeated. It is a disgrace to stay defeated.

THROUGHOUT CANADA

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QUEBEC.

SOCIETE DENTAIRE DE MONTREAL.



HE regular meeting of the Societe Dentaire de Montreal was held at the University Club on the 18th of January, 1926. Dr. A. Ferron, professor at the University of Montreal, gave a paper on "Cleft Palate and Harelip." The speaker gave the technique of his operation, known all over Europe as "Ferron operation." A hearty vote of thanks to the speaker was passed before adjournment.

Other regular meetings of the Societe Dentaire de Montreal were held February 9th, March 9th, and April 13th. The speakers were: Dr. Paul Geoffrion, who gave a paper on the "Ideal Age in the Correction of Dento-facial Deformities"; Dr. Jacques Lantier, who gave a paper on "The Use of Non-cohesive Gold in Dentistry"; and Dr. J. A. Pinault, who gave a paper on "Articulation."

—P. GEOFFRION,
Secretary.



PRESENTATION TO DR. STEVENSON AT MONTREAL DENTAL CLUB, APRIL 14, 1926.



T the annual meeting of the Montreal Dental Club, with Dr. F. H. A. Baxter presiding, Dr. F. Arnold Stevenson was presented with a Sheffield tray on behalf of the Club, as a token of esteem and affection. The presentation was made by Dr. Chas. Morrison, an old associate of Dr. Stevenson's, who pointed out how much the recipient was admired by his confreres for his cordial co-operation in the interests of the profession and this

Club, for his exemplary professional conduct and for his kindness in all contacts with his fellows. The speaker mentioned that Dr. Stevenson had been a pupil of the late Dr. Beers, and later graduated from Harvard Dental School in 1888, and had been in practice in Montreal since.

For many years he was on the Provincial Board of Examiners, a charter member of this Club, formed in 1897, one of the founders and first President of the Canadian Dental Association, 1902, and in addition a member of the staff of the McGill Dental School for many years.

The tray bears this inscription: "Presented to F. Arnold Stevenson, D.M.D., F.A.C.D., by the Montreal Dental Club, as a token of esteem and affection, and in appreciation of his services, through many years, to this city, to his profession and to this Club, April, 1926."

The presentation was made amid vigorous applause, after which Dr. Stevenson replied in a happy vein.

Dr. D. J. Berwick, a pupil of Dr. Stevenson's, some 30 years ago, and Dr. F. G. Henry, a very old friend, brought forward the name of the guest of the evening as an Honorary Life Member.

The old Minute and Cash books of the Club from 1897 to 1909, newly bound, was on display. This document will be deposited in the archives of McGill Medical School.

The new officers are:—

President—Dr. A. N. Jenks.

Vice-President—Dr. D. P. Mowry.

Sec.-Treas.—Dr. W. C. Bushell.

Committee—Drs. F. H. A. Baxter, Campbell Morris, Earl Laurin, Paul Silver, J. Abraham.

This was the largest and most interesting annual meeting ever held by the Club.

The speaker of the evening was J. Roddick Byers, M.D., Superintendent of the Laurentian Sanatorium, who gave a most helpful and lucid address on "The Relationship of Dental Disease to Pulmonary Tuberculosis."

* * *

A. N. J.

MANITOBA.



N acute interest is manifested by the dentists here in the claim for damages allowed against Dr. C. A. Powers, of Brandon. The jury allowed \$2,000.00 and costs, but it is now being appealed. It seems Dr. Powers extracted nine deciduous teeth for a six year old girl, under nitrous oxide. His nurse assisted him and the child's aunt was present in the operating room,

seeing only the things necessary to help make a damage suit successful. Some months later a deciduous tooth was removed from one of the bronchi by a throat specialist. Dr. Powers denied any knowledge of the tooth going down the bronchi, and refused to meet any of the medical bills to the parents. A fairly strong case was made out that the tooth was dislodged by the mouth prop and had got into the bronchus in the dentist's office, as an irritating cough developed before leaving the office, but the jury was poorly charged as to what constituted ordinary skill and negligence.

It is felt that if this judgment is allowed to stand it would encourage other damage suits, and the Manitoba Dental Association are, therefore, going to assist Dr. Powers in his appeal.

* * *

Dr. Sparrow, of Minneapolis, was the guest of the Winnipeg Dental Society on Saturday afternoon and evening, March 20th. In the afternoon he gave an illustrated lecture on "Crown and Bridge-work." The evening session was devoted to a rapid-fire talk on the "Business Side of Dentistry." A very large attendance greeted Dr. Sparrow.

* * *

Apparently, several dentists here thought my moose hunting story about Dr. Maves was too far-fetched to be grounded on facts. Now that it is known to be genuine, requests have come for extra copies.

* * *

DR. G. J. CLINT, 1849-1926.



R. G. J. CLINT has passed on. For more than fifty years he practised dentistry, of which the last thirty-five years were spent in Winnipeg. Everybody loved him. His face was a mirror reflecting a beautiful character. I know a dentist who said: "Dr. Clint is the only *real* Christian I ever knew." There were sixty-five dentists at his funeral, held in Grace Church, at three o'clock on a Monday afternoon—a tribute few command. He had excellent mechanical ability, was always studying and practising the newer methods, which, combined with a high sense of professional ideals, ever kept him in the front ranks of his chosen calling.

He was born near Smith's Falls, Ontario, in 1849. At sixteen he apprenticed himself with the Frost and Wood Company, completing a mechanical training. Then he articulated as a dental student with Dr. Stackhouse, paying one hundred dollars for the privilege of learning dentistry, in addition to his free services. He passed his examinations and received his license for Ontario in 1874, practising for a

short time at Arnprior, from whence he moved to Almonte, where he continued in practice until 1891. The call of the West brought him to Winnipeg that year. In 1924 the Winnipeg Dental Society gave him a banquet on attaining fifty years of practice. He was actively engaged in practice until about two days before the end came, enjoying good health.

In a few months he would have celebrated his golden wedding. Besides his widow, he leaves five daughters and three sons, one of whom (Dr. A. E. Clint) has been associated in practice with his father for several years.

W. W. W.

Expression of Sympathy Adopted By Montreal Dental Club



HEREAS death has visited us, and taken from amongst us two of our charter members and friends, Dr. Peter Brown and Dr. Jeffery H. Springle, in the passing of whom we lose two commanding figures from amongst that group of men who were the pioneers of our club; and whereas in their death the profession at large has lost two of its earnest advocates and members, whose unfailing integrity has represented during their long professional life the highest qualities as sound and progressive practitioners; therefore

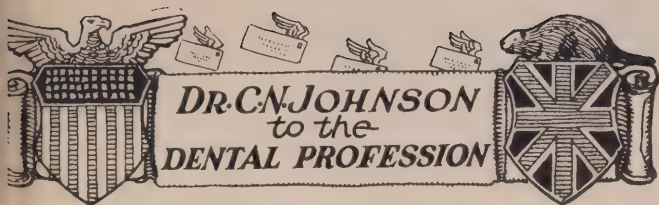
BE IT RESOLVED that the Montreal Dental Club extend its sincere sympathy to Mrs. Brown and Mrs. Springle in their bereavement, which is the bereavement of the whole profession, and express its highest regard for the work and character of those pioneers who so ably exemplified the highest ideals of dentistry; and

BE IT FURTHER RESOLVED that a copy of these resolutions be entered in the minutes of this meeting and sent to the official journal for publication.

WINSTON C. BUSHELL,
Hon. Secretary.



OUR fellow neighbor dentist is a good fellow, and if patients of his run in and call him all sorts of names, remember your patients may be running to your fellow dentist with the same tales. Talk things over and reason with them, you will feel better for it.—*Fred F. Schartz, D.D.S., in Dental Student.*



Loyalty

IN some respects loyalty is one of the finest, the purest, of all human sentiments. Without loyalty all those minor interests of life, and many of the major ones, would not flow freely along the currents of our lives. To defend the character of a friend when you hear it attacked, even though you may not be familiar with all the facts, is infinitely better than to stand idly by and, in effect, by your silence, contribute to the criticism. "Standing up" for a friend or acquaintance is a very praiseworthy occupation.

Without loyalty the machinery of life could not function with assurance and safety—there is always uncertainty where there is lack of loyalty. The need of loyalty is not confined to family and friends; it goes out into all the avenues of life and affects us in every relationship of business or society. One of the most outstanding examples is the loyalty that is due between employer and employee, and both are equally obligated. There is nothing more beautiful in business ethics than the loyalty which is sometimes demonstrated in this respect.

A short time ago something happened in a large business house which is worth recording. One of the heads of the firm died suddenly, and there was consternation throughout the entire organization. He had been the chief cog in the biggest wheel of the machinery of that business, and there was grave conjecture as to what would happen when he was so suddenly taken away. There was a conference of the remaining officials and the heads of all departments, and the loyalty to the organization which this man had instilled into them bore abundant fruit. They resolved that the business should not suffer if renewed application could prevent it, and each individual in the organization pledged his devotion in double measure to meet the emergency. The result was that in a few months the business was on a better basis than ever and making more money. A spirit had been developed which probably never would have been manifest without some emergency, and which surely never could have been manifest unless the principle of loyalty had previously been imparted to the entire force. And the very best display of loyalty in the whole situation came later. When

everything was moving smoothly and the business was on a splendid basis, the new head of the organization was asked when he was going on his vacation. "Well," said he, "the business is running satisfactorily, and there is not the slightest reason why I couldn't get away as well as not, but I haven't the heart to go and leave the rest of the force when they have been so loyal, and when so many of them voluntarily gave up their vacations to hold the organization together when the emergency came. We are all very happy together and I am going to stay with them." And yet the statement is frequently made that there is no sentiment in business. A spirit like that will weather any storm and bring the ship of business safely into port, when lack of loyalty would put it on the rocks and leave it a total wreck.

There is too great a tendency to ignore the obligation of loyalty on the part of employees of large corporations. Too frequently those in the minor positions display an attitude of indifference to the best interests of the organization, and that is one of the reasons why they are in minor positions. They seem to assume that the heads of departments and the managers are their mortal enemies, when as a matter of fact they are their own worst enemies. You seldom talk to one of these individuals in minor positions who does not let you know how much better he could run the business than the men who are in control. He never seems to realize that if it were not for the men in control he would not have a position at all, and would likely find himself in the bread line.

Just as I sit at my window writing I see a typical illustration of disloyalty. I have heard a motor engine running for a long time—apparently running aimlessly. It excites my interest and I look out. I soon see the situation—the operator has gone away and left the engine running. I conjecture that if the man had any respect for his property he would not thus waste gasoline and needlessly wear out his engine, and here is the rub—I find that the motor belongs not to him but to the Government. Why cannot men learn the fundamental lesson that there is a moral disintegration which goes with this kind of disloyalty; and in addition why cannot an individual see that whatever belongs to the government belongs to him? That man was in reality imposing on himself, when he thought in a foolish abstract way that he was imposing on someone else.

The fact of being loyal not only imparts a sense of security to the one to whom loyalty is given, but it brings the most serene satisfaction to the one who displays it. There is no feeling more blessed than the thought that you have stood true blue to a friend, through adversity as well as in prosperity, and the happiest man is he who thinks more of the welfare of others than he does of his own. Somehow nature has

way of compensating a man who is loyal and generous towards those with whom he comes in contact by giving him a sense of peace and happiness which never comes to the one who selfishly seeks his own advantage at the expense of others. Loyalty is one of the greatest assets of life; paying interest to the receiver as well as to the dispenser. It is among the supreme virtues, and the source of the surest happiness.

C. H. Johnson

Professional Fees

PATIENTS are fully justified in believing that a physician knows the value of his services better than anyone else can possibly know it, and that the price he sets upon such services is consistent with their worth. If they want cheap service they will go to a cheap doctor; but if they desire to obtain the best medical advice available they will consult the man who places a high estimate upon his own liabilities.

Make no mistake in this, however. No man is fool enough to pay a superheterodyne price for a crystal-set service *more than once*. If your fees are high you must be in a position to make the returns to your patient so satisfactory that he will be convinced that they are cheap at the price.

The only permissible basis for competition among medical men is that higher form of rivalry known as *emulation*—who can give *the most* in proportion to the charge made!

If you are not willing to strive, *every day*, to make your advice *worth more* to the people who come to consult you, why then, of course, it is proper to consider that advice in the same category with potatoes or crackers and cheese, and bid for patronage as the grocers do, by cutting the price.

Remember, however, that if you do cut your fees you will find it very difficult to raise them again to the former standard without a serious falling off in your clientage; and that, in cutting them, you are lowering your own standards, professionally as well as financially, and undermining the high standing of the profession in general.

It is a far more worthy and more satisfying proceeding, from every possible point of view, to increase your *value* to your individual patients and to the community in general, and then raise your fees to correspond with the increased worth of your services.—*Clinical Medicine*.

Obituary



IN the passing of Dr. G. J. Clint, Manitoba has lost a most universally liked and respected member of the Dental Profession. Coming to this Province in the early days, when there was little or no co-operation among the dentists here, he was a pioneer in creating that spirit of good fellowship which is so marked a feature in Manitoba to-day.

He was a member of the board of directors of the Manitoba Dental Association for many years, being at one time its president. Always ready to help in any good cause, especially in the advancement of dentistry, his honesty of purpose was so apparent that he was able to speak his mind at all times without giving offence or making

any enemies.

He was of a genial disposition, with a keen sense of humour, and was known to all, especially to those who knew him intimately, as a man who lived up to his ideals both in professional and private life.

G. F. BUSH.

Clinic Patient Ninety-Seven Years Old

A few days ago a male patient, ninety-seven years old, walked into a dispensary clinic and had three teeth extracted under procaine anæsthesia. It was his first experience, and it was with some difficulty that he was dissuaded from having some more out. I wonder how often patients of this age come to a dentist—it would even be remarkable to have the dentist go to them at that age!

Oral Health

EDITOR :

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TORONTO, MAY, 1926

No. 5

EDITORIAL

What is the Next Forward Step for the Dominion Dental Council of Canada?



THE Dominion Dental Council was organized in 1905 (twenty-one years ago), thus reaching its majority this year. The Council has served an unusual purpose, and its past record amply justifies its present existence and future development.

In a country so widely distributed as are the people of Canada, and with various provincial educational systems, it is essential that a national registration board be charged with the duty of studying the various conditions, for comparison and equation of values.

The requirements of a national council must, of necessity, at least equal the standards set by the agreeing provinces. Otherwise, the anomalous and impossible position would be created of a means being afforded whereby a candidate might enter a province by a standard lower than that required by the province.

It is doubtful whether a national dental body could ever secure the support of all the provincial dental boards in Canada so long as certain candidates are given preferred treatment and granted certificate without examination, while others are required to write examinations.

At the time of the inception of the Dominion Dental Council, the formation of so-called "classes" was doubtless justified and necessary to the success of the Council. But a new generation of dentists has now arisen. Those of the past generation have had ample opportunity to take advantage of the special opportunities that have been provided for D.D.C. registration, and we may fairly assume that those who have not already taken advantage of the regulations have little thought now of doing so.

There were originally four classes:

CLASS A—Those who entered upon the study of dentistry in Canada after January, 1905. *Required to pass regular examination.*

CLASS B—Those who were students of dentistry in November, 1905. *Required to pass special examination.*

CLASS C—Those practitioners not ten years in practice in Canada in November, 1905. *Required to pass modified examination or wait for expiration of ten years.*

CLASS D—Those who had been in practice in Canada more than ten years, in November, 1905. *Granted certificate upon presentation of certificate of qualification, providing certain ethical requirements had been fulfilled during practice.*

There are doubtless exceptional circumstances worthy of special consideration, but these might be considered in connection with individual applications to the provinces concerned. For example, the case of an ethical dentist who has given many years of valuable service to dentistry, and who desires, for personal or other reasons, to move from one province to another, might be sympathetically considered by the Board of the province to which he desires to move. In such cases, an organization designed for national registration might better not be brought into action.

We believe the Dominion Dental Council may have to take more than one step before it is recognized as a national council. But as a first step, is it not worth while considering the advantages to be gained by the entire abolition of all "classes" but one, namely, those candidates who are willing to meet the regular examination requirements of the Council?

Correspondence

Ottawa, Ontario, 245½ Bank Street, April 19, 1926.

Allan Secombe, D.D.S., F.A.C.D., Editor, Oral Health, 102 Wells Hill Avenue, Toronto 10, Ontario.

The Dental Study Club, sponsored by the Ottawa Dental Society, held, during the week commencing April 12th, a course conducted by Rudolph Hanau, of Buffalo, which proved to be a unique and unparalleled success. It was not only in the interest manifested, but also in the adaptability to its practical application by the general practitioner.

Over forty per cent. of the combined total of the Ottawa Dental Society and Study Club supporters available attended Mr. Hanau's course. It would have reached a greater per cent. had not sickness during that week prevented previously enrolled members from attending. Conditions beyond their control prevented other contemplated members from participating in the course.

This remarkably high attendance percentage is of still greater interest and importance when it is considered that 82% of the practising Ottawa dentists take, or have taken, an active interest in the meetings of the Dental Society or Study Club during the past five years. 71.5% of the total Ottawa dentists supported the Society in 1925-26.

We are justly proud of our high percentage, and doubt if there are many professional societies or study clubs which can record so favorably under similar or even comparative conditions.

Mr. Hanau's course was a brilliant success, theoretically and clinically, and although the general practitioner might at first expect that the technique would be too difficult, nevertheless, it was first explained so simply, and then afterwards so clearly and repeatedly demonstrated, that it was "brought home" to each and every member of the class.

One full upper and lower denture case was carried through, and practically completed during the week's class, as well as over twenty correction cases.

Mr. Hanau recorded in Ottawa the same conditions as he found prevailing elsewhere from coast to coast in the States. In his experience of checking-up full denture cases for investigation or correction, it was found that in the examination to date of about one thousand cases made on arbitrary instruments, only one single solitary case goes on record as being correct as regards balanced articulation.

This case occurred in California, and was an accident; an accident in that the particular articulator employed was sitting idle on a shelf in the dentist's laboratory; and a further accident inasmuch as the patient just happened to fit that particular articulator.

Like a well-known Roman General of old, who on one occasion of victory despatched "*Veni, Vidi, Vici*,"—"I came, I saw, I conquered," Rudolph L. Hanau has convincingly carried all before him and demonstrated to us our errors of the past and their means of correction. His demonstration was most gratifying and encouraging in that with care and understanding we can avoid our past mistakes and build up for our future patients dentures of comfort, satisfaction, greater efficiency and longer service.

Patients with records of having numerous dentures made, all of which proved to be failures, were presented to the class. The reasons for failure were clearly pointed out by Mr. Hanau, and those dentures which were within correctable limits were, by means of the Hanau technique, converted into comfortable, efficient dentures. This feat was performed in some cases in less than one hour. Other cases were so far off as to call for complete reconstruction.

The week's course of evenings only, and one afternoon, was most profitably spent, and will repay one hundred fold, financially to ourselves, in comfort to our patients, and in the peace of mind that we have seen the light and can thereby render a service heretofore impossible.

The Dental Study Club of the Ottawa Dental Society has gone on record as recommending its early investigation by similar organizations, and that no prejudice or undue influence should stand in the way of its serious consideration.

While some may state that the Hanau technique is inseparable from the Hanau articulator for full denture cases, we feel that the principles involved, and so clearly demonstrated, have given us a new and broader

conception of functional occlusion than we ever had before, and are applicable in general practice, not only in full denture cases, but also in partial dentures, in fillings, inlays, crowns, bridges, periodontia and preventive periodontia cases.

Let honor be given where honor is due, and may the time soon come when full recognition will be given by the profession at large and all concerned for the invaluable services rendered to a tolerant and long suffering public, rendered by one of an allied profession with the genius to conceive, contrive, and adopt ways and means to surmount which, heretofore, had been a stumbling block to our profession.

Our aim is to "carry on" in our Study Club the Hanau technique and its application, and thereby obtain and maintain greater efficiency in our chosen profession, and render a greater and broader service to humanity.

LORNE E. MacLACHLAN,
Secretary-Treasurer, Ottawa Dental Society.

Winnipeg, March 22nd, 1926.

To the Editor, Oral Health, Toronto, Ont.

Dear Sir:—Will you kindly publish the following letter, which is a copy of one I have sent to Mr. Henry Thompson, President of the Dental Company of Canada, in reply to his criticism in February of my article in January Oral Health, re cost of dental supplies.

Yours truly,

W. W. WRIGHT.

Mr. Henry Thompson,

President, The Dental Company of Canada, Ltd., Toronto.

Dear Mr. Thompson:—

I note with interest your letter in February issue of Oral Health, regarding the cost of dental supplies, and I wish to give you some further information. But, before proceeding, let me preface any remarks I may make with the statement that I had no intention then or now of depreciating dental supply dealers in general or any dealer in particular, and when I paid tribute to the honesty and integrity of our dealers in general, I meant it. Honesty does not necessarily include wisdom, nor practical common sense, and my sally was to disclose a case of gross lack of something—call it what you like. Your effort as president of the dental supply company to discount my statement regarding the hose, only shows that information on this subject is lacking at the very place it should not be. I said I procured the same kind of hose except that it had no sheath, as the dealer supplied. I repeat that statement, and any reflection on your part that it must have been "very common garden hose" that I procured is a mis-statement and shows you have not yet taken the trouble to verify my statement.

You state that had I waited the hose would have been forthcoming without the attachment for \$5.25, or approximately (my figures) \$1.00 a foot. I am telling you that that hose minus the sheath can be procured in Winnipeg at 8c a foot wholesale. I am sending you a sample to prove it. Maybe the sheath and the dealer's profit are sufficient to make 8-cent hose sell for a dollar. If so, I give up and you win.

I might add further that the maroon color of the hose I procured matched very nicely the mahogany waste pipe hose and mahogany chair, and I was not at all ashamed of it. If it had not matched, it would soon have done so by the addition of five cents worth of paint, rather than \$5.00 worth of colored sheath.

Since that article appeared I have been 'phoned to by four other dentists asking where I got the hose.

Yours truly,

(Signed) W. W. WRIGHT.

Last Call—Ontario Dental Convention



THE Ontario Convention will begin on Monday, 17th of May, and continue until Thursday at noon. Registration will take place at the King Edward Hotel, Toronto, on Monday morning, and the official opening at 2 o'clock.

“Man is clearly made to think ;
here lies all his dignity and all his
merit, and his whole duty is to think
aright.”

—Pascal.



W. W. WOODBURY, B.Sc., D.D.S.

Dr. Woodbury is a nephew of the late Dean Woodbury, and occupies the chair of Orthodontia, Dalhousie University, Halifax.

ORAL HEALTH

*A JOURNAL THAT STANDS FOR THE OUNCE OF
PREVENTION AS WELL AS THE POUND OF CURE*



Vol. 16

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No. 6

Articulation

RUDOLPH L. HANAU, DIPL.-ING., BUFFALO,
Licensed Professional Engineer, State of New York.

INTRODUCTION.

"I do not like the obscure thought; I like to see the plain truth brought directly out upon the page, devoid of all that camouflage which many poets use. So I, who have no wish to mystify, will always call a spade a spade. There are no tricks about my trade. I am a poet whose appeal is made direct. I'll not conceal my thoughts beneath some pretty phrase that can be read in different ways. I'll not dress up the things I say to suit the fashion of the day. And so, unless you're satisfied with simple truth, then cast aside this little book, because in it you'll surely find some verse to fit the thought that your pet idol may, like all the rest, have feet of clay."

OWEN WHITE.



SHORT discussion of a few issues pertaining to denture construction may extricate the patient reader from a confusion to which the writer himself unwittingly contributed during his early and recent literary activity. At the bottom of his undoing lay the utter chaos of dental nomenclature; a chaos so bewildering that years of work of competent dental bodies have not as yet been able to clear the debris of misnomers, misinterpretations, etc.

It is aggravating to have a technical investigation misinterpreted on account of lack of uniformly applied terms; hence the necessity to annex concise definitions to the technique.

A strenuous effort was made to closely adhere to the original meaning of standard and quasi-standard terms, and to modify these or add to them as little as possible, when they were comprehensive.

In the past—and rather too frequently—it was the custom to cramp into an articulator technique bombastic theories plus almost everything, from the study of facial contour and psychology to the sleeping habits and financial status of the patient, and sometimes, in addition thereto, instruments and instrumentations with superfluous embellishments and serious omissions were recommended as a panacea against dental failures.

A perusal of the professional and commercial literature opens to the unbiased investigator an embarrassing retrospect upon many ideas and methods, advanced to bring to the chair and laboratory good articulation and some particular mechanism to establish it. Many writers accepted and elaborated upon premises produced by the queerest distortions of reasoning.

There is a justification not to criticize commercial writings for gilding the edges of their wares with “expert” write-ups; there should be an appreciation of the pioneers, who climbed even a single rung on the ladder of progress. There exists a privilege for practitioners to accept proclaimed authorities; but there is no excuse, in scientific research and teaching, for camouflaging errors and omissions, nor for circumnavigating or bewitching an issue—even in ignorance. Truly scientific issues cannot be chained to ignorance or archaic erudition, nor to commercial, political, social or religious inclinations.

It is rather instructive, though embarrassing, to recollect that Christensen's, Walker's, and Kerr's pioneer work were noble plants long neglected on an unplowed field; that Gysi's and Prothero's wonderful advances were discredited by commercial zeal, general incomprehension and selfish interests; that certain dental philosophies still live with their friends; that some theories have become religious cults of exclusive circles; and so on.

Some reformers considered it their duty or privilege to look down upon the “average” dentist as a brainless step-brother, who could only absorb a polished instrument exalted by mellifluous phraseology.

A survey of the situation, extending from coast to coast, has convinced the writer that a good many of those “average” dentists are not only keener thinkers, but also are better denture constructors, than the quasi-reformers who fill the pages of our journals.

This is a rather terse review of the recent status of denture prosthesis, but, without going into detail, the doubter is urged to peruse our dental literature of the last decade. During the last few years a decided betterment of the situation is noticeable. Independent thinkers have found, and made it known in unmistakable terms, that the time for speculation is past and that a new era in denture restoration has begun.

Realizing the situation, the author will endeavor to win and retain the reader's confidence by treating the subject under consideration from the viewpoint of proven facts and practical application, acknowledging limitations where he found them.

TECHNIQUE AND ARTICULATOR.

It is to be regretted that comprehensive requirements for an articulator are not more widely known. Even the National Society of Denture Prosthetists, which has had the subject under consideration for a number of years, has not been able to enumerate acceptable specifications. So far, the Society has obviously overemphasized minor points and lent a deaf ear to important considerations in such a way that those acquainted with past and recent developments make courteous disposal of their recommendations by maintaining a benevolent silence.

There is no justification for differentiating techniques, if they only differ by the use of instruments or materials. There should be new and outstanding meritorious features pertaining to fundamental principles involved. The instruments and materials themselves are of wholly secondary importance, except that they must be the most suitable for the purpose.

Whether this articulator technique merits remaining known as the Hanau Technique, is left to the reader's discretion.

The Hanau Articulator and Technique are based upon valuable findings and interpretations of early and recent investigators, whose logical thoughts and many excellent points of instrumentations were carefully studied, scrutinized, modified where necessary, and finally fused with a definite and practical method of making mandibular registrations which takes into consideration the resilient and like effect of the tissues upon these registrations.

Incidentally, it was necessary to develop an articulator which, with the technique,

1. Lends itself to convenient and accurate application of registrations.
2. Is practical to manipulate.
3. Is simple and precise in function.
4. Allows succinct comparison of findings and results.
5. Permits compensation for the resilient and like effect of the tissues in the mouth, which latter do not exist in the articulator, because a mounting of casts or models in an articulator is rigid.

Without modification of the common principles involved, the Hanau Technique and Articulator are applicable to all branches of dental restorations, whether of natural or artificial teeth; yet, in order to preserve succinctness, we shall here confine ourselves to the requirements and manipulations of full denture prosthesis.

An articulator, in the prosthetist's hands, is primarily a setting-up

instrument for arranging the masticatory surfaces into articulation, in such a manner that the selected teeth are not unduly mutilated by grinding down their cusps; thus, grinding-in, though important, becomes a secondary operation.

The Hanau Articulator is not intended to be an "anatomical articulator" as interpreted in the dental literature. Proofs why and how an articulator should deviate in its functions from the anatomical apparatus have been given by the writer, and these proofs were amply substantiated by researches, which have shown that the articulator jaw members should produce movements *equivalent* to those of the mandible to the maxillae. The writer has officially demonstrated that movements of the jaw members of an articulator have a definite relation to the anatomical movements, and that both are by no means the same, but must be equivalent, in order to compensate for the effect of the resilient supporting tissues upon which prosthetic dentures function in the mouth. The deviation of articulator movements from anatomical movements increases with the increase of the resilient and like effect.

The Hanau Articulator and Technique give consideration to the resilient and like effect of the tissues, and also to our limitations in making mandibular measurements. More than that, definite means to determine, interpret and eliminate errors, are incorporated:

1. A method to make reliable rest records in the mouth.
2. The making of articulator records and their check and correction in the mouth.
3. Compensating features and adjustments of the articulator.
4. Pointing out the limitations and tolerances of mandibular measurements and their compensation.
5. The Correction Technique.

The underlying thought of the technique is the recognition of the fact that utmost precision is required to obtain balanced articulation, and that measurements of the resilient anatomical apparatus, when taken, are none too accurate to begin with. Nevertheless, precision is the ultimate goal.

Balanced articulation assures efficient function of the dentures, because it enhances their stability, eliminates undue tissue changes in the mouth, and adds to the comfort of the patient.

Be it emphasized: *the ultimate object of the Hanau Technique and instrument is to enable the operator to achieve balanced articulation of the masticatory surfaces in the mouth of the patient.*

DENTURE BASES AND OCCLUSAL RIMS.

Occlusal rims are "dummy" dentures, used by the prosthetist to fill the space left between the edentulous ridges, the tongue, the cheeks and the lips. They conform to the spacial requirements of the pro-

posed denture restoration. The occlusal rims further serve as an important means to register, record and transfer accurate ridge relations and requirements of mandibular function. It is urged to build occlusal rims of a material such as compound or well-hardening wax material of a high melting point, upon denture bases only.

No attention whatsoever seems to have been given in the past to the influence of the character of the seating surfaces of a denture, or its equivalent, upon the adjustments of an articulator. The writer reasoned—and it has since been found correct—that the formation of the seating surfaces and the magnitude and distribution of the resilient tissues affect the results of registrations, and thereby lead to different articulator adjustments.

In order to eliminate a change of the resilient effect, this technique suggests for all registrations the employment of bases which have the same form of seating surfaces and borders as are ultimately used in the mouth of the patient. These bases shall be referred to as *denture bases*.

It has been found most satisfactory to utilize only denture bases for building up the occlusal rims, as well as for making records subsequently necessary for articulator mountings and adjustments and the setting-up of teeth.

Metal bases, ultimately used with the finished dentures, are the most reliable denture bases from the viewpoint of making measurements. They may have been cast, swaged, or otherwise prepared. Second in order of reliability are vulcanized bases. Bases made of Ash's Art Metal, and also compound lined base-plate material, may satisfactorily serve at times. The use of the original impressions for making measurements is not recommended by the writer, mainly because of the difficulties encountered when attempting re-checks. Bases made of base-plate material only are unreliable, because they do not assure the same seating surfaces the ultimate denture has, and, in addition, they are subject to distortion.

Making the Upper Occlusal Rim:

Step 1—Build upper occlusal rim with softened wax or compound on the upper denture base, to approximate length and contour.

Step 2—Soften the occlusal surface of the upper occlusal rim and place in patient's mouth.

NOTE: It is advantageous to have the wax of the rim still in a plastic condition when softening the closing surface by applying heat.

Step 3—Insert lower denture base without wax or compound thereon.

- Step 4—Direct the patient to close, and observe that an approximate centric relation is established and that the lower denture base scarcely touches the upper (which usually occurs at the posterior borders first). Thus an imprint of the lower denture base is made in the wax of the upper occlusal rim.
- Step 5—Remove upper occlusal rim and lower denture base from the mouth.
- Step 6—Trim the occlusal surface of the upper occlusal rim, using the imprint made by the lower denture base as an outline.
- Step 7—Trim the lingual, labial and buccal surfaces to approximate dimensions.

Making the Lower Occlusal Rim:

- Step 8—Build up softened wax on lower denture base to approximately the desired height, plus about 1 mm. at the posterior extensions and about 2 mm. at the incisal region.
- Step 9—Have the patient close and observe that an approximate centric relation is established, regardless of pressure applied, until the jaws have closed into the approximately desired opening relation. (Establish the desired intermaxillary space.)
- NOTE: It is practical at this point to have the patient close from one to three mm. in excess, observing that the posterior margins of the denture bases do not touch.
- Step 10—Trim and contour all surfaces of the lower to match the corresponding surfaces of the upper occlusal rim.
- Step 11—Mark approximate median line and incisal edge line on labial surfaces of the occlusal rim.

THE FACE BOW.

Almost every dentist is conscious of the existence of the face bow; a great many were using it, yet not too many were deriving the full benefit of its use, because of omissions, oversights, or deficiencies of steps of denture restoration, from which it cannot be separated.

We rely upon this instrument to record the correct positional relation of the maxillary ridge in the patient and to transfer it to the articulator, where we reproduce a positional relation, which enhances succinct interpretation of the maxillo-mandibular conditions. The face bow technique substantially as given by Gilmer and Snow, is one of the finest and most elegant contributions to dental metrology. The face bow record and transfer are simple and expeditious operations offering substantial advantages; they consume only from one to five minutes. Failure to use the face bow brings about complications which may

only be compensated for by consideration of factors irrelevant to denture construction.

The elimination of the face bow technique was excusable in the past, for we had no complete, definite technique to profit by the advantages it offered. The application of the face bow in teaching and practice will be continued by those who prefer systematic procedures to penny wisdom and pound foolishness.

The marking of the locations on the condyle centres is not a micrometer operation nor a carpenter's job. Missing the theoretical condyle centre locations 3 mm. in the most unfavorable direction engenders a deviation in direction of point movement in the incisal region of about 5° in direction and of about 5% in magnitude. This all means that an average error of 1/10 mm. contact relation at the masticatory surfaces is invited by missing the condyle centre locations 3 mm. in the most unfavorable direction. Such error does not necessarily show itself at the masticatory surfaces, for it is compensated for automatically through other registrations.

The missing of the face bow registration within tolerance has an influence upon the setting of the horizontal and lateral indications which can be disregarded, for reasons given later.

Therefore, let us locate the condyle centres with good anatomical judgment and without pendency.

The omission of the face bow registration is being revived and advocated primarily to substantiate pseudo-advantages, and has proved profitable to the quantity denture producer.

The writer does not recommend the omission of the face bow technique, nor does he wish to encourage unskilful application, because an arbitrary or faulty mounting is dovetailed with several irrelevant and confusing considerations.

Face Bow Record:

Step 12—Prepare upper and lower mounting casts of plaster of Paris.

NOTE: These mounting casts should not be thick, in order to be convenient for mounting. Both casts must fit the denture bases snugly, yet allow convenient removal of both bases with occlusal rims.

Step 13—Mark locations of condyle centres on both sides of the face upon the skin, about 13 mm. ($\frac{1}{2}$ inch) anterior to the auditory openings on lines towards the outer corners of the eyes.

Step 14—The condyle rods, at the end of the face bow, are adjusted to proper width by placing their ends over the condyle

centres where marked on the patient's face, so that their ends slightly touch the skin.

- Step 15—The bow is now removed from the face and the condyle rods adjusted symmetrically on both sides, using the calibrations as a guide.
- Step 16—The prongs of the bite-fork are now imbedded in a horse-shoe-shaped mass of softened wax.
- Step 17—The upper occlusal rim is adapted to the soft wax on the prongs of the bite-fork in such a position that the stem extends forwardly and parallel to the median line.
- Step 18—Insert the lower occlusal rim into the patient's mouth.
- Step 19—Insert the upper occlusal rim with the bite-fork attached into the patient's mouth.
- Step 20—Have patient close into the softened wax on the bite-fork until both rims are imbedded sufficiently to hold the bite-fork in position.

NOTE: No attention need be given to the relation of the mandible to the maxillae, when making this registration.

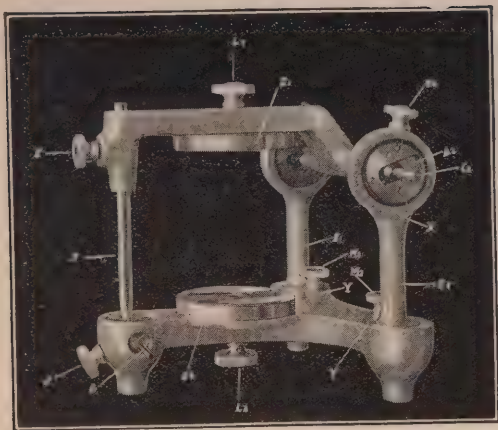
- Step 21—Draw face bow over face, allowing the extending stem of the bite-fork to enter the clamp, and position terminals over the marked condyle centre locations.
- Step 22—Holding the bow in position, have clamp securely locked.
- Step 23—Check, and if necessary readjust terminals, so that they just touch the skin over the marked condyle centres and lock them in position.

NOTE: Asymmetrical setting has no bearing upon the registration itself. (See 27).

- Step 24—Remove face bow carefully and keep it undisturbed for the transfer to the articulator.
- Step 25—Remove both occlusal rims from the mouth.

Preparing the Articulator and the Face Bow for Mounting:

- Step 26—Before mounting the upper cast, the articulator is preliminarily set as follows:
1. Set calibrations X on the right and left side to read 30.
 2. Set calibrations Y at the right and left base to read 15.
 3. Lock the incisal guide in a steep inclined position.
 4. Set incisal pin flush at top with the upper surface of the upper jaw member.
 5. Oil or vaseline is applied to the frame where plaster is to be built up. Soapstone powder is equally serviceable.



A1, A2 right and left slots in which "condyle elements" move, B1, B2 locknuts for right and left horizontal condylar adjustments, C1, C2 right and left terminals of condyle shaft, D1, D2 upper and lower mounting plates, E1, E2 right and left posts for lateral (sagittal) condylar adjustments, G adjustable incisal guide, H incisal pin, J locknut for incisal adjustment, K lockscrew for incisal pin, L1, L2 lockscrews for upper and lower mounting plates, M1, M2 locknuts for right and left lateral condylar adjustments, X calibrations for horizontal condyle indications, Y calibrations for lateral condyle indications.

6. A mounting plate is attached to each jaw member and held in place by screws.

NOTE: Lock all nuts by hand, using no undue force or pliers.

Step 27—Set sliding condyle rods, at the end of the face bow, symmetrically on both sides, until the bow gently springs over the articulator condyle shaft, provided they were adjusted symmetrically on the patient.

NOTE: For asymmetrical setting, which may have occurred during operation No. 23, the rods are shifted *equidistally in opposite directions* until the bow gently springs over the articulator condyle shaft. Adjustment of the condyle rods is facilitated by turning the upper member of the articulator back, or turning the articulator around, to avoid possibilities of unsettling the face bow record.

Face Bow Mounting:

Step 28—Insert upper occlusal rim, with the upper mounting cast placed therein, into the wax record on the bite-fork.

- Step 29—Raise or lower the face bow, with the condyle rod ends over the condyle shaft extensions, until the accepted incisal edge line is approximately on a level with the groove marked around the incisal pin.
- Step 30—Support the face bow by a soft wire from the upper jaw member, or retain it otherwise, using perhaps a second clamp on the face bow with a supporting rod, or a face bow hoist.
- Step 31—Apply plaster on top of the mounting cast, while the upper jaw member of the articulator is swung back; swing the upper jaw member forward and embed the mounting plate with gentle pressure into the soft plaster, and complete the mounting with a spatula. Remove all excess plaster extending above the mounting plate.
- Step 32—After the plaster hardens, remove the face bow and the upper occlusal rim from the articulator, and if necessary trim the mounting, removing it temporarily from the articulator.

RECORDS.

A record is a fixation of a registration by means of a suitable instrument, device or material, and it is made permanent or reproducible by applying suitable registering methods and devices in conjunction with impressions, calibrated adjustments, etc.

Calibrations on certain parts of the articulator are practical and useful. On other parts they are obtrusive or merely intended to suggest accuracy. Therefore, apparatus laden with minutiae should be recognized as unpractical and confusing.

Of all records, centric relation record is the most important. It is also the most difficult one to obtain and to check correctly. There are numerous methods to establish centric relation in vogue. Of all these methods the Gysi gothic arch tracing is the most admired, because it is the only scientific method existent which lends itself to graphic and other demonstrations.

The Gysi gothic arch tracing is a basic contribution to denture prosthesis as important as the face bow. It constitutes a link in a chain of operations, and does not give results *per se*. It therefore should not be underestimated, nor in enthusiasm overrated.

The Gysi gothic arch tracing is an excellent check of an already established centric relation. In skilled hands it is often of great help while establishing centric relation; however, a new incisal tracing should be made for check. An experienced denture prosthodontist will not shirk the additional time which such a seeming detour involves, for he already knows what it means to "miss the bite."

Heretofore, too little importance was attached to reliable records. Some men did not consider or know of centric jaw relation, as we define it; others claimed to "establish centric occlusion with the face bow." Most of these sciolists believed the protrusive relation record to be superfluous.

There was a kernel of common sense in such a belief.

Over four hundred cases built on arbitrary, average and semi-adjustable articulators, in accordance with various techniques, were on some previous occasion carefully examined by the writer, and not a single case was found to be in balanced articulation, as he interprets it. It is duly recorded that a great number of these cases were tolerated by the patients, and that a very limited number of upper dentures had fair stability where favorable ridge formation was present. The stability of the lower was invariably lost in function. As an indirect proof of this imputing statement, it may be well to mention that cases within correctible limits were rectified.

The ordinary, every-day denture had to be considered a fiasco by the dental engineer. The establishment of unstrained centric jaw relation—a prerequisite of sound denture construction—was missed as a rule.

Ergo, the common sense that was: why pile rocks on quicksand?

"Missing the bite" is the prime cause of denture instability, discomfort and tissue alteration. These three items form a vicious circle which inevitably debilitates the denture supporting tissues, thereby changing the original condition from bad to worse. The fact that the helpless patient tolerates the bad or the worse does not alter the situation in the least.

The failure to register unstrained centric jaw relation (to make a centric relation record) is observed too frequently. Masticatory function in all its stages becomes automatically impaired in consequence thereof.

REASONABLE TOLERANCE.

We frequently read of, or hear of, "accurate," "exact," and similar attributive adjuncts with mandibular measurements. Your writer has come to the conclusion that all measurements of living tissues need not be more than reasonably accurate in order to be scientifically acceptable and useful in practice. His conception of reasonable accuracy of mandibular measurements follows.

There exist certain practical tolerances for measurements with each and every engineering work, denture restoration, which is engineering in small space, not excepted. The prosthetist must endeavor to turn out well articulated dentures, and he will, if he works reasonably close without being pedantic or careless.

Tolerances for Individual Measurements:

For registration or measurements of:	Tolerance Plus or Minus:
(a) Location of condyle centre	2 mm.
(b) Angular deviation of maxillary condyle line.	3°
(c) Angular deviation of occlusal surface	3°
(d) Distance of incisal contact point from con- dyle line	2 mm.
(e) Horizontal condyle indication	5°
(f) Lateral condyle indication	5°
(g) Condyle head excursion of 6 mm.	1 mm.
(h) Diameter of teeth	.05 mm.
(i) Contact relation of natural teeth in one jaw in the mouth:	
Horizontal	.10 mm.
Vertical	.20 mm.
(j) Contact relation of natural teeth in two jaws in the mouth:	
Horizontal	.30 mm.
Vertical	.10 mm.
(k) Inclination of tooth axis	arbitrary.
(l) Contact relation of prosthetic teeth in two jaws in the articulator	.01 to .10 mm.
(m) Contact relation of prosthetic teeth in two.. jaws in the mouth, depending upon the resiliency of tissues:	
Visually	.20 to .50 mm.
Digitally	.20 to .50 mm.
By measurements and records..	.05 to .30 mm.
By the patient's tactile sense..	.03 to .50 mm.
(n) Angles of tooth cusps in the articulator ...	5° to 10°
(o) Angles of tooth cusps in the mouth	8° to 15°
(p) Angles of ground-in tooth cusps in the articulator	3° to 5°
(q) Angles of worn-in tooth cusps in the mouth	5° to 10°
(r) Tissue compression by ill-fitting prosthetic dentures in the mouth	.50 to 1.00 mm.
(s) Tissue compression by well-adapted prosthe- tic dentures in the mouth	.20 to .50 mm.
in the articulator	.05 to .30 mm.
through interpretation	.05 to .10 mm.
(t) Application of forces in registering	not controllable.
(u) Application of no forces in registering	controllable.

These valuations were arrived at by experience, data, analytical deductions and estimates; they should not be accepted as the last word. The table is to serve as a guide for the operator and is submitted to scientists for further investigation and improvement.

Assuming that the above table of tolerances is an acceptable exposure of our limitations of observations and of measuring, then:

Neither the face bow record, nor centric relation record, nor protrusive relation record, nor lateral relation record, nor any other record of two points of the tissues, are registered and subsequently recorded with mathematical accuracy.

Admitted that this is true. Happily:

Neither the face bow record, nor the other mandibular records mentioned, need be determined with mathematical accuracy. As mathematical considerations they are primarily of theoretical interest and value. Their reasonable approximations are of immense practical value, inasmuch as they lend themselves to demonstration, explanation and instrumentation.

Such is the evidence as your writer sees it. The "mathematical accuracy" is the ideal—the goal the ambitious approach asymptotically, yet never will reach. Therefore, in order to understand prosthesis better, and in order to be able to build better denture restorations systematically and with less effort, we should always make our records skilfully to obtain reasonable approximations.

This candid review should encourage rather than discourage investigators, teachers, practitioners and students. An understanding of the true situation will eradicate diffidence and prevent being deceived by lacquered truths and pseudo-scientific theories.

REGISTRATION WITH CONSIDERATION OF FORCES.

Walker probably is the first who emphasized that "bites should be taken in soft wax." The recommendation infers the application of a minimum of force. The writer considers Walker's recommendation as basic as the face bow and the incisal tracing methods.

The magnitude and direction of forces and their points of application during a registration are beyond the control of the dentist and the patient. It is logical to conclude that any method suggesting to record jaw relations under pressure is unreliable for initial articulator mountings and adjustments.

Of all magnitudes, directions and points of application of forces which a patient can possibly apply, there is only one reliable and definite combination, and that is the magnitude of force *zero*, a force which has no direction nor point of application.

A method was, therefore, developed to register all relations with a

closing force of zero; that is, when the masticatory surfaces are in balanced contact and no closing pressure is applied.

Biting in itself infers the application of force. Therefore the biting into wax, etc., is always coincident with an application of force. In order to reduce the magnitude of this force to a practical minimum to begin with, the material used for making a record should be of a very soft and even consistency at the time the record is made. It should also possess the property of becoming hard after the record has been obtained. Certain compounds and wax compositions very satisfactorily possess both these properties; the first when heated and the latter when cooled or chilled.

Because of our inability to predetermine and maintain exactly the required distribution and consistency of the interposed wax, it occurs that some parts of the recording surfaces offer greater resistance than others, in which event a greater strain is transmitted to the tissues in the regions of greater resistance.

The parts under which the denture intrudes into the tissues are detected in various ways: (1) visually, (2) digitally, (3) by interpretation of the patient's sense of touch, and (4) by measurements.

CENTRIC JAW RELATION REST RECORD.

The patient is directed to close the mandible to the desired jaw separation in centric relation in order to register the position of the mandibular ridge to the maxillary ridge. Thus the space is established into which the finished dentures are ultimately inserted. In making the first record with occlusal rims built upon denture bases or their equivalent, let us assume (as we should) that there was unequal resistance to the closing force at the various parts of the closing surfaces and, in consequence, unsuitably distributed pressure upon the various parts of the supporting tissues.

Those parts of the closing surfaces which were under undue pressure are the ones which become raised, when the pressure is released. These raised parts make premature contact upon closing.

The raised parts thus detected may be reduced, or the parts making no contact built up. The high spots are reduced by reheating them and the area around them over the flame, and directing the patient to close, whereby the still softened and plastic areas are reduced. Those parts of the closing surfaces which failed to make contact are built up with molten or suitably softened wax, and the patient again directed to close, thus evening the recording surfaces.

By means of one or both of these expedients, which may have to be applied repeatedly, the record is reduced in height or built up until an even contact of the entire closing surfaces under no pressure is accom-

plished. The very last operations usually are: to lightly heat one entire closing surface over the flame and to direct the patient to close very gently into the accomplished centric relation rest record; which, when thoroughly chilled, is again tested.

Centric Relation Registration:

Step 33—Apply a dust of soapstone powder with a soft brush, or a film of vaseline, to the recording surfaces of both occlusal rims, to prevent sticking.

Step 34—Insert the upper occlusal rim into the mouth.

Step 35—Insert the lower occlusal rim, upon which has been luted a suitably shaped recording material, 2 to 3 mm. thick.

Step 36—Direct the patient to close to the desired jaw relation in a retruded rest position (unstrained centric relation, the condyle heads resting gently in their sockets).

NOTE: At no point must the recording material be perforated.

Step 37—The accuracy of the centric relation rest record is determined by having the patient slightly open and slowly close into the chilled recording material. The entire recording surface must meet upon closing at all areas simultaneously, and the occlusal rims must not be displaced. Check by visual and digital examination and by the patient's perceptibility of contact distribution upon closing.

NOTE: The arrow-point tracing may profitably be applied in conjunction with the other determinants; but it does not suffice alone.

Step 38—Raised areas detected by the patient or the operator on the recording surfaces may be reduced by reheating locally with a heated spatula or a small flame. When areas fail to make contact, they should be built up. At times it is advisable to do both, until an even contact distribution is accomplished and the rims register accurately.

NOTE: If inequality of the recording surfaces is found, it is advisable that the beginner make an entire new record. The more experienced may proceed to correct inequality by the above described method.

Step 39—The occlusal rims with the centric relation rest record are carefully removed from the mouth.

Mounting the Lower Mounting Cast in Centric Relation:

Step 40—The centric relation rest record is accurately registered in the articulator between the upper and lower occlusal rims

(the latter having the lower mounting cast inserted) and secured in place.

NOTE: The articulator still remains set as given in No. 26.

It is of utmost importance that the "condyle elements" rest against their stops, while mounting the lower mounting cast in centric relation.

Step 41—Plaster of Paris is applied to mount the lower mounting cast to the lower model support, previously (26) attached to the articulator.

Checking Centric Relation Rest Record:

Step 42—A centric relation record is now made in the articulator.

NOTE: Observe that the "condyle elements" rest against their stops.

Step 43—Trim the labial and buccal borders of this record carefully with a sharp knife, so that the recording edges of preferably the upper recording surfaces are clearly exposed to view.

Step 44—This record (43) is checked in the mouth (37), and, if found faulty, corrected (38) by remounting the lower (39, 40, 41, 42) and rechecked (43).

NOTE: The well-known Gysi arrow-point tracing method is particularly recommended for checking the centric jaw relation position, by using the point, where the lateral excursion lines meet, as check (37).

Step 45—Mark definitely the median and incisal edge lines on labial surfaces of occlusal rims.

PROTRUSIVE JAW RELATION.

The general practitioner and many specialists of yesterday did not bother with a registration of the protrusive jaw relation, simply because they figured out, or were told by others, that it was unnecessary to consider condylar guidances. The protrusive registration is essential.

Christensen was the first to make protrusive records. Here again we register an important step forward in denture prosthesis.

Christensen did not pay any particular attention to the pressure under which these records were taken. The wax or compound record technique which your writer recommends is the Christensen method, modified to give consideration to the absence or presence of pressure when making a record.

It was Christensen's, and all of the following investigators' and practitioners' belief, that a geometrical reproduction of the direction of the condylar guidance was required in the articulator. That this is not so has been brought out by your writer (in 1921).

The relative movements of the instrumental jaw member points and of the corresponding anatomical points have the same starting point, but differ in directions of movement, depending upon the resilient and like effect involved.

An error in the face bow mounting has an influence upon the condyle indication; also an unhappy relation of the condylar indication to the incisal indication, when associated with a careless face bow transfer. The influence becomes evident through a deviation of the condylar indication from the condyle inclination. However, if we assume that the face bow is being used with reasonable care, and if we are familiar with cause and effect of the accompanying phenomena, then it should be granted to incorporate the influence of the face bow mounting with that of the resilient seating of the dentures, by referring to the resilient "and like" effect.

Whatever the starting points and directions of accepted centres or points of the anatomy may be, we should always produce equivalent movements of the corresponding points in the articulator. The direction and magnitude of these equivalent movements approach the anatomical movements closest when we arrive at the masticatory surfaces. They do not coincide, though some practically do.

Articulator and anatomical movements do not, and need not, coincide mathematically—

1. On account of the limitations of an instrument;
2. On account of limitations of anatomical records; and
3. Because certain compensations are automatically taken care of.

Due to these limitations, and because the mode of function required of an artificial denture is different from that of a natural denture, provisions have been made in technique and articulator which enable compensation for limitations and difference of mode of function.

The protrusive relation record is required to adjust the horizontal condyle indication, so that the instrument jaw members perform movements which are equivalent, but not identical, to the relative movements of the mandible to the maxillae.

The wax or compound record is interposed between the closing surfaces of the occlusal rims, or their equivalent. The protrusive relation record is then obtained like the centric relation record; of course, the patient is directed to close in protrusive relation.

Sometimes we may omit an interposed record and prefer to soften the closing surface of one occlusal rim, or we may find it convenient to apply registering blocks or staples on the labial and buccal surfaces of the rims. Such deviations from the recommended procedure do not affect in any way the principles involved. They may complicate interpretation and add uncertainty of registration.

Protrusive Relation Registration:

Step 46—Apply a dust of soapstone powder with a soft brush, or a film of vaseline, to the recording surfaces of both occlusal rims, to prevent sticking.

Step 47—Insert the upper occlusal rim in the mouth.

Step 48—Insert the lower occlusal rim with a softened layer or roll of wax (2 to 4 mm. thick) spread over the recording surfaces.

NOTE: Often it is more convenient to insert first the lower and then the upper; undue lapse of time will cause premature chilling of the wax.

Step 49—Direct the patient to close into the soft wax with the mandible in protruded relation, approximately 6 mm. ($\frac{1}{4}$ inch) anterior to centric relation, with an opening relation approximating that of the accepted centric relation.

Step 50—Ascertain that an accurate protrusive relation rest record is taken by having the patient slightly open and slowly close into the protrusive relation record. The entire recording surfaces must meet at all areas simultaneously, and the occlusal rims must not be displaced. Check by visual and digital examination, and by interpretation of the patient's perceptibility of the contact distribution upon closing.

Step 51—Raised areas detected by the patient or the operator on the recording surfaces may be reduced by reheating locally with a heated spatula or a small flame. When areas fail to make contact, they should be built up. At times it is advisable to do both, until an even contact distribution is accomplished and the rims register accurately.

Step 52—The occlusal rims with the protrusive relation rest record are carefully removed from the mouth.

Adjustment of the Horizontal Condyle Indication: (Hanau Articulator Model H).

Step 53—The upper and lower occlusal rims are placed on their respective mounting casts in the articulator, while the upper jaw member of the articulator is swung back. The incisal rim has been disengaged by raising it about $\frac{1}{2}$ " off the incisal guide.

Step 54—The protrusive relation rest record is accurately fitted upon the lower occlusal rim, if it had been removed.

Step 55—Examine excursions of the "condyle elements" to see that they are about 6 mm.

NOTE: The magnitude of the excursion is evident from the space between the "condyle elements" and their stops.

Protruded lateral relation rest records, instead of truly protruded relation records, are frequently registered by the patient. If the excursion of the "condyle element" on one side exceeds 4 mm., and on the other side is 1 mm. within the range limited by the length of the "condyle slot," then the record may still be used at this stage of the technique. At times the patient fails to register a true protrusive or even an acceptable protruded lateral rest record. In this event, lateral relation rest records are used to adjust the horizontal condyle indication on the balancing sides of the respective lateral relation.

Step 56—The horizontal condyle adjustment is freed by releasing locknuts B1 and B2.

Step 57—The upper occlusal rim, securely seated in the mounting cast, is accurately registered in the record.

Step 58—The "condyle slots" are adjusted by carefully using the locknuts B1 and B2 as handles.

NOTE: First manipulate one side, then the other, and check both again alternately. An accurate seating must be secured without applying force, so that the recording surfaces are not mutilated.

Step 59—Locknuts B1 and B2 are locked by hand, without using force or pliers, while the occlusal rims register accurately on the record.

Checking Protrusive Relation Rest Record:

Step 60—A protrusive record with "condyle element" excursions of approximately 6 mm. (5 to 6½ mm.) is now made in the articulator.

NOTE: It is suggested that the inexperienced operator temporarily set the posts E1 and E2 to read 0° on calibrations Y. in order to secure a straight protruded excursion of the mandibular axis, and that he interpose wooden (not metal) blocks of 6 mm. (¼ inch) thickness between the "condyle elements" and their stops, in order to secure the desired excursions.

Step 61—Trim the labial and buccal surfaces of this record carefully with a sharp knife, so that the recording edges of preferably the upper recording surfaces are clearly exposed to view.

Step 62—This record (61) is checked in the mouth (50), if found faulty, corrected (51), the "condyle slots" of the articulator readjusted (52, 53, 54, 55, 56, 57, 58, 59), and rechecked in the mouth (50).

Step 63—A written record of the right and left condyle indications is made for later reference.

LATERAL JAW RELATION.

One should be well versed in centric and protrusive jaw relations before attempting to interpret lateral relations, registrations, adjustments and accompanying conditions. The fact is, that lateral condyle indications (the horizontal as well as the sagittal setting of the articulator guides) are influenced by the face bow transfer, by the distal relation of the condyle centres of the articulator to the anatomical condyles, by the original centric relation mounting, by the magnitude of the condyle excursions and by the opening relation of the jaws.

Assuming all these determinants were reasonably definite and referred to a most suitable measuring instrument (Kinoscope, for instance), then we will still obtain different readings for various pressures applied. These complications partly account for the great differences of horizontal indications sometimes established by protrusive and lateral records independently. An exhaustive discussion of these interesting problems is beyond the scope of an Articulator Technique.

The writer considers it prudent to impart a component of *over-protrusion in the articulation* to prosthetic dentures, in order to obtain a compensation for the mode of function of these, which is different from natural dentures.

In consequence a prosthetic denture, when completed, should have a *tendency to over-retrude in the mouth* in lateral occlusion. This over-retrusion should gradually disappear towards centric occlusion, where it must become zero.

Depending upon the resilient effect of the supporting tissues, an effective over-retrusion varies from 5 to 12% of the momentary distance of an articulating point from its centric occlusal position.

The Hanau Articular Model H is so designed that dentures built on it articulate in the mouth with a component of over-protrusion within the range mentioned. That means they have the tendency to find premature contact of the distal inclines of the lower cusps with the mesial inclines of the upper cusps, if they would have to articulate in what is considered theoretical anatomical articulation.

On the Kinoscope the percentage of over-protrusion may be altered at will to start with. Whether it is an advantage to start with an anatomical lateral record, plus or minus a preconceived over-protrusion

in the articulator, depends upon the sagacity, dexterity and luck in speculation of an operator.

Lateral relations have to be considered in some manner in order to avoid undue cusp interference in lateral occlusions. The registration of lateral relation records in the mouth is associated with considerable labor, difficulty and uncertainty. The uncertainty may be minimized at the expense of additional labor and difficulties, by using the incisal tracing for determining and checking a true lateral position.

The writer at present holds the opinion that the setting of a lateral indication by an anatomical record does not offer any particular advantages to start with. It is his experience that the required over-protrusion on the working side in lateral cannot and need not be predetermined, but that it is to be established on the finished case in the mouth, by records, observation and interpretation of symptoms on the ridges.

The formula

$$L = \frac{H}{8} + 12$$

is recommended and has been used with the Hanau Articulator Model H for initial settings of the lateral (sagittal) indications for about five years, and it has been found satisfactory for that purpose. In this formula

L = lateral condyle indication in degrees, and

H = horizontal condyle indication in degrees as established by the protrusive relation rest record.

The plus or minus read on the calibration is disregarded in the formula, which was arrived at graphically by plotting experimental and experience values.

Cusp interference which may be embodied in the denture by using the formula recommended, may be eliminated by manipulation of the articulator adjustments and consequent grinding. (Correction Technique.)

Lateral Relation Rest Record:

Circumstances may warrant the consideration of a lateral relation record taken in the mouth. Right and left lateral relation rest records are obtained exactly in the same manner as the centric and protrusive relation rest records, except that the patient is directed to close into the respective lateral relation. For prosthetic work, it is recommended to interpose a layer of wax on the balancing side only, in order to obtain suitable lateral relation rest records for adjustments of the Hanau Articulator Model H.

This technique ordinarily does not employ lateral relation rest records taken in the mouth for articulator adjustments, yet a lateral relation

rest record is sometimes obtained and its use indicated, because the patient fails to give a true protrusive relation record. In such a case the lateral relation rest record is used to adjust the articulator's horizontal condyle indication on the balancing side only. Lateral relation records *made in the articulator* are frequently used for checking. If the horizontal indication obtained with the lateral record deviates unreasonably from that obtained with the protrusive record, then it should be recorded. Each indication is then used separately for the lateral and protrusive requirements. The causes for such deviations, which are not the rule, were given previously.

LATERAL CONDYLE INDICATION.

In order to avoid laborious operations and the difficulties and inaccuracies encountered in recording suitable lateral relation records with occlusal rims (or their equivalent), it is recommended to employ the following method to arrive at acceptable lateral indications: The reading of the horizontal indication on graduation X *without regard to minus or plus* is taken, divided by eight, and twelve added. The result gives the setting for the lateral indication, which is read on graduation Y at the base.

Examples:

The horizontal condyle indication on the *left* side reads *plus 40°*, then the *left* lateral indication is arrived at as follows:

40 divided by 8 equals 5, and

5 plus 12 equals 17, therefore

the *left* lateral condyle indication is 17°.

The horizontal indication on the *right* side reads *minus 24°*. The minus is disregarded. Then the *right* lateral indication is arrived at as follows:

24 divided by 8 equals 3, and

3 plus 12 equals 15, therefore

the *right* lateral condyle indication is 15°.

Lateral indications above 20° need not be considered for the time being (they rarely have to be), though they have been registered with the aid of lateral relation records. This conclusion has been reached after careful measurements were made with the Kinoscope and after these measurements were scientifically interpreted.

Adjustment of the Lateral (Sagittal) Condyle Indications:

Step 64—Take left condyle indication on graduation X (disregard plus or minus), divide by eight and add twelve.

Step 65—Swing post E2 into position to read the desired angle on graduation Y.

- Step 66—Take right horizontal condyle indication on graduation X (disregard plus or minus), divide by eight and add twelve.
- Step 67—Swing post E1 into position to read the computed angle on graduation Y.
- Step 68—Locknuts M1 and M2 at the bases of the posts are locked by hand without using force or pliers.

Checking Lateral Relation Records:

- Step 69—A left lateral relation record with a condyle element excursion of approximately 6 mm. (5 to $6\frac{1}{2}$ mm.) on the balancing side is made in the articulator.
- Step 70—Trim the labial and buccal surfaces of this record carefully with a sharp knife, so that the edges of preferably the upper recording surfaces are clearly exposed to view.
- Step 71—This record (69) is checked in the mouth (50); if found faulty, corrected (similarly as in 51), the condyle slots of the articulator readjusted (similarly as in 52, 53, 54, 55, 56, 57, 58, 59) and rechecked in the mouth.
- Step 72—A right lateral relation record with a condyle element excursion of approximately 6 mm. (5 to $6\frac{1}{2}$ mm.) on the balancing side is now made in the articulator, analogous to steps 69, 70 and 71.
- Step 73—A written record of the left and right horizontal condyle indications obtained with the checked records (71, 72) is made for later reference.
- Step 74—The left and right horizontal condyle indications as recorded (63) are re-established in the articulator, which is now ready for giving consideration to the incisal guide and setting up the teeth.

INCISAL GUIDE.

In enthusiasm one is bound to over-estimate details, or to under-rate essentials. Political propagandists and shrewd business men know this and profit by it. Science also profits by enthusiasm of the mass and of individuals. For that reason your writer looks with benevolence upon the actions and propaganda which individuals are indulging in when heralding and furthering a detail of some merit.

After a storm, a calm is bound to smooth the waves.

The face bow, impressions, æsthetics, mandibular movements, condylar guidance, centric occlusion and many other details have had their well-deserved time. Now, centric relation and the incisal tracing are riding the crest of the wave—the incisal guidance will soon follow.

In scientific investigations details must be considered conscientiously.

However, no preference should be given to them because they look pretty, or because they may be sensationalized.

The incisal guide problem offers occasion for interesting and deep study, which at times has overtaxed many enthusiasts. The function of the incisal guide is understood as well as that of the condylar guides, and its mechanical execution has been solved by the writer. He considers one of his designs as theoretically near-perfect and scientifically satisfactory, but he fails to see a practical necessity for it at the present time.

Theoretically, an incisal guide should be adjustable to guide a point along a superior surface of a bicuspid, which imparts equivalent movements to this point. (It is assumed that the guided point be one of the mandible. Analogously, we may interpret a maxillary guided point.)

From a dento-scientific viewpoint, we may limit the requirements of an incisal guide to the posterior caved portion of the superior surface of the bicuspid and substitute it by two hinged surface guides (or their equivalent), which are adjustable in three dimensions.

In good, practical prosthetic full denture work there is no need for what has been defined a "theoretical" or a "scientific" incisal guide until the operator becomes familiar with all theoretical factors which govern incisal guidance.

The incisal guide as a practical mechanism should have a suitably curved guiding surface, which is adjustable in three dimensions to accommodate certain physical and æsthetic requirements of denture construction.

The adjustments of an incisal guide are primarily governed by:

1. the incisal guidance contemplated in the mouth (overbite and overjet);
2. The cusp formation of the posterior teeth;
3. the compensating curves contemplated;
4. The plane of orientation; and
5. the condyle indications (horizontal and lateral).

Intricate and reciprocal relations exist between these important factors. The subject will be treated separately under "Laws of Articulation."

The incisal guide adjustment presented a problem very much similar to that of the adjustment of the lateral condyle guides. It required considerable effort, expenditure, labor and time to arrive at a practical design of the guiding surfaces on account of the complex and reciprocal influences of the incisal guiding surfaces upon the many factors enumerated above.

The standard incisal guide of the Hanau Articulator Model H

consists of a spherical element having specially formed guiding surfaces, and it is adjustable in three dimensions within considerable range. The standard incisal guide in its present form had passed through more than a dozen modifications before it was released.

It is advantageous to give special consideration to the relation existing between the incisal guidance and condylar guidances, as governed by the requirements of prosthetic articulation. The consideration of this relation is a good method to decide the approximate incisal indication for the articulator. Usually it is necessary to associate a flat incisal guidance with steep condylar guidance and *vice versa*, in order to fulfil purely technical requirements, given by the form and shape of the teeth available in the market. For the same reason it is practical to associate condyle inclinations different on both sides with an antero-posterior incisal inclination harmonizing with the mean average of the condylar inclinations, and to associate a steeper lateral inclination of the incisal guidance with the flatter condylar guidance, and *vice versa*. In other words, if all other things are equal, the incisal guidance of a denture is steepest diagonally across on the side opposite the flatter condylar guidance.

This applies to conditions in the mouth and to the articulator adjustments as well, with this important difference: the incisal guide on the articulator for lateral guidance has to be steeper on the same side, because the mandibular member of the articulator is equipped with a guiding surface for a mandibular point, while in the anatomy the lingual surface of the maxillary incisors is considered the guiding surface for a mandibular point. In other words, when the incisal guide pin traverses the right half of the incisal guiding surface on the articulator, it furnishes a guide for the lower incisors on the left.

It has been found advantageous to start a setting-up of teeth with the following incisal indications:

<i>Condyle Indications:</i>	<i>Incisal Indications:</i>
Minus 5° and below	35° or more
Minus 5° to plus 20°	25° to 40°
Plus 15° to " 30°	15° to 30°
" 25° to " 45°	5° to 20°
" 40° and above	10° or less

Those mathematically and mechanically inclined may deduct from the wide range of mutations of the associations of incisal and condylar guides that there are more important considerations than the mechanical problem which already has been solved for theoretical, scientific and practical purposes.

Adjustment of Incisal Guide:

- Step 75—Adjust antero-posterior indication of the incisal guide to conform to the mechanical requirements of both condyle indications.
- Step 76—Adjust lateral indication of the incisal guide to comply with the difference between the individual condyle indications by manipulating the sidewardly extending handle.
- Step 77—Hold guide in position with this handle and lock locknut "J" without using force or pliers.

TEETH.

Æsthetics:

Teeth may be selected to harmonize in form and hue to generally accepted æsthetic standards, modified by three factors:

1. The dentist.
2. The patient.
3. The environment.

Many of us do not have a highly developed sense of discerning harmony. For this reason we should utilize the helpful charts and rules which systematize tooth form and facilitate their selection.

The posterior teeth are exposed to view very little, or not at all; therefore their æsthetical consideration is of less importance.

Both the anterior and posterior teeth have to participate in the exacting functions of mastication and speech. The alignment and position of the anterior teeth play a more important role in the function of speech than that of the posterior teeth, while the latter have to perform most of the function of mastication.

The alignment of the anterior teeth to comply with the requirements of phonetics closely coincides with those of æsthetics. We have more freedom in aligning the posterior teeth in the space left between the ridges, the tongue and the cheeks. The bicuspid, and more so the molars, have little bearing upon phonetics and æsthetic demands. The main function of the posterior teeth is mastication. In order to fulfil this function, which is purely physical, all the teeth must be effectively shaped and properly aligned.

Step 78—The accepted centric relation is opened about 1 mm. between the anterior portion of the ridges by setting the incisal pin, to allow for grinding.

Step 79—The six upper and six lower anterior teeth are preliminarily set up to the accepted incisal edge line, with consideration of æsthetics, ridge position and chosen incisal guidance.

Step 80—The occlusal rims with the preliminary set-up of the anterior teeth are inserted in the mouth of the patient, checked for æsthetics, and phonetics if possible, and modified if necessary

Readjustment of Incisal Guide:

Step 81—Readjust the incisal guide to harmonize with the accepted guidance of the anterior teeth.

NOTE: The adjustment is readily checked by observing that the incisal pin is guided on the incisal guide, while the anterior teeth articulate. The expedient of tracing with the incisal pin an incisal guide into compound is advised in cases where the condyle indications are very flat (negative) and also in partial denture construction.

Setting-up of the Teeth:

Efficient function of the teeth is achieved by establishing balanced occlusion during articulation, with means balanced articulation.

Balanced articulation is secured by the position and alignment of the teeth and the formation of the masticatory surfaces as governed by the patient's individual anatomy and his natural or acquired habits. However, this is not all.

The arrangement of the teeth and the selected formation of the masticatory surfaces have a reciprocal influence upon each other. This influence is formulated in the "Laws of Balanced Articulation."

Step 82—The set-up in wax of the entire masticatory surfaces into occlusion and articulation is completed in the articulator, the denture space being the prime guiding factor. Æsthetics, phonetics, statics and articulation are checked in the mouth by observations and records.

Step 83—Should protrusive interference be observed in the mouth, then readjust the horizontal condyle indication to reproduce in the articulator the error observed in the mouth, either by means of protrusive records or, if the operator is experienced, he will be able to do so by sight.

Step 84—Should lateral interference be observed in the mouth, then lateral relation records are taken by interposing a strip of soft wax between the masticatory surfaces on the balancing side *in the articulator* (69, 70) and, while soft, correcting in the mouth, and the lateral indication readjusted to conform to the corrected record.

NOTE: The left lateral relation record is used to readjust the lateral indication on the right side, by rotating post E-1 on the right. The right lateral record serves to adjust the left lateral indication by rotating post E-2 on the left.

Preliminary Grinding of the Masticatory Surfaces, etc.:

The articulator, when readjusted, shows the cusp interferences observed in the mouth. For technical reasons, a definite over-retrusion of the masticatory surfaces on the working side in lateral should be observed in the articulator, if a true lateral relation record made in the mouth were inserted.

Step 85—Interfering cusps in centric relation are corrected by applying the carborundum wheel, preferably by deepening the sulci. Interference in lateral or protrusive is eliminated by grinding with the wheel one or both interfering opposed cusp inclines, or, if the interference is minute, by grinding in the articulator from the respective occlusion into centric occlusion.

Step 86—Having the teeth in satisfactory occlusion and articulation with the desired æsthetic and phonetic effect, the gums are carved.

Step 87—The teeth set up in wax, with the gums carved, are finally checked back in the articulator, before being vulcanized, to ascertain that proper function has not been disturbed. All articulator adjustments are recorded for later reference.

Remounting Record:

In order to eliminate the necessity for making a new face bow record and transfer, a remounting record is prepared, if the original mounting casts are not preserved on their mounting plates.

Step 88—Remove the lower mounting plate with the lower cast and replace by a new mounting plate.

Step 89—Apply a dust of soapstone powder with a soft brush, or a film of vaseline, or cover all lingual surfaces of the upper denture snugly with No. 60 or thinner tin foil, to prevent sticking of the plaster to the surfaces.

Step 90—Build up plaster of Paris, just high enough to allow an impression of the occluding surfaces of the upper teeth.

Step 91—Swing the upper articulator jaw member, to which the upper denture is still attached, in centric relation into the still soft plaster.

Step 92—When the plaster is about to set, remove upper articulator jaw member with cast and denture attached, carefully lifting it off its seating in the plaster.

VULCANIZATION, ETC.

The dentures are carefully carried through the process of vulcanization by carefully flasking, packing, vulcanizing and finishing.

REMountING.

It is customary to make a special remounting record as given in steps 88, 89, 90, 91 and 92. In such a case the mounting of the upper denture is almost identical to the technique to be given for using the preserved original mounting casts prepared in step 12. We shall only describe the remounting with these.

Remounting of the Upper Denture:

- Step 93—Prepare new upper and lower mounting casts for the fully vulcanized denture (as in 12).
- Step 94—Establish a new centric relation rest record in the mouth, as in 33 to 39.
- Step 95—Place the lower denture upon the original mounting cast; if necessary, trim same to compensate for slight changes during vulcanization, so that the lower is seated securely.
- Step 96—Place upper denture with upper mounting cast (93) inserted, in centric occlusion upon the lower.
- Step 97—Mount the upper as given in steps 31 and 32.
- NOTE: Steps 93 to 97 are equivalent to the face bow mounting.
- Step 98—Retain lower denture registered with the upper in centric relation record in the articulator, and remove the lower mounting cast and mounting plate, and insert a new mounting plate.
- Step 99—Insert the new mounting cast in the lower denture and mount same as in 40 and 41.

RECHECKING ARTICULATION OF THE FINISHED DENTURES.

The articulator adjustments are set as recorded in step 87. Articulator records are made, rechecked in the mouth, and, if necessary, the articulator is readjusted as was done before. The incisal pin should be disengaged by clearing the guide.

GRINDING-IN OF THE OCCLUSAL SURFACES.

High spots still showing in the mouth or the articulator may have been caused by expansion, shrinkage and displacement during vulcanization. They are ground off with the carborundum wheel and finally with carborundum paste. The grinding with carborundum paste is continued in the articulator until the teeth articulate perfectly.

The dentures are brought into the mouth and articulation is checked. We may find minute interferences, sometimes of an entire region of the masticatory surfaces. Such interferences in a newly made

denture may be due to the resiliency of tissues; it is not difficult to correct. Interferences found after a lapse of time are due to alteration of tissues. (See Correction Technique.)

The grinding-in operation requires dental dexterity, and an understanding of ordinary mechanics. It is considered inadvisable to rely on so-called machine or automatic grinding attachments, to perform this operation, for, firstly, it is wrong in principle, and, secondly, there is nothing gained. Cusp interference must, in all cases, be eliminated by carborundum wheel grinding before any carborundum paste is applied to grinding-in in the articulator. The latter operation consumes very little time (5 to 15 minutes), and requires the operator's constant attention. Only he, through his sense of touch, will be able to grind-in a denture as it should be ground.

Carborundum Wheel and Paste Grinding:

Step 100—Determine high spots in the articulator and corroborate in the mouth.

Step 101—Grind-off cusp inclines with the carborundum wheel to conform to requirements dictated by the laws of occlusions and articulation.

Step 102—Apply carborundum paste to the occluding surfaces.

Step 103—Apply articulator grinding, alternating approximately as follows:

1. Twenty strokes from left lateral into centric occlusion.
2. Twenty strokes from right lateral into centric occlusion.
3. Twenty strokes from protrusion into centric occlusion.

NOTE: Repeat this order of grinding, giving extra grinding where necessary, but do not grind indiscriminately. Wherever undue cusp interference becomes evident, it should be touched with the carborundum wheel.

Observe that condyle shaft is held against the condyle element on the balancing side. This is conveniently done by gently pressing the thumb against the end of the condyle shaft on the working side, while executing lateral grinding.

Step 104—Polish occluding and adjacent surfaces of the teeth with mud of pumice-stone applied, as is customary, to a cloth wheel and felt cone.

CORRECTION TECHNIQUE.

It is assumed that mandibular registrations and records were made and the dentures (or their equivalent) were mounted in the adjusted articulator, analogous to the method given in the "Articulator Technique."

The rectification of the occluding surfaces applies to teeth set up in wax, to just completed dentures, as well as to dentures already used. The limitations for grinding down of the occluding surfaces, so they may articulate in balance, are given by the amount of tooth material available for sacrifice. New dentures properly made should always be correctible.

The following *rectification technique* applies to both cases; yet it must be mentioned, that the *limitations for correction are given by the amount of tooth material available for sacrifice.*

RECTIFICATION OF FINISHED VULCANIZED DENTURES.

The Technique is divided into two distinct phases.

Phase A:

(a) Centric occlusion of the masticatory surfaces is corrected by wheel grinding, in some instances by rebasing, or both, as circumstances may warrant.

(b) *Elimination of interference in lateral and protusive occlusions of the masticatory surfaces.*

The teeth set up in wax may again be reset, ground with the wheel, and occasionally ground with carborundum paste in the articulator. Of course, the maintenance of centric relation of the jaws is observed.

After vulcanization, correction by wheel and carborundum paste grinding only is possible.

Phase B:

To eliminate interference observed or registered in the mouth:	Readjust the articulator as follows:
In the entire incisal region, in protrusion or in lateral occlusion:	Increase the horizontal inclinations equally on both sides, about 5° at a time, and grind until the interference is eliminated.
In the left incisal region, in protrusion or in lateral occlusion:	Increase horizontal inclination on the right more than on the left, for instance, 10° on the right and 5° on left.
In the right incisal region, in protrusion or in lateral occlusion:	Increase horizontal inclination on the left more than on the right side.
In the molar regions (both sides), in protrusion or in lateral occlusion:	Decrease horizontal inclinations equally on both sides, about 5° at a time.

In the molar region, <i>right side</i> :	Decrease horizontal inclination on the right side and increase on the left side until it bears on the right molar region only.
In the molar region, <i>left side</i> :	Decrease horizontal inclination on the left side and increase on the right until it bears on the left molar region only.
Laterally in the <i>posterior</i> region:	Increase lateral inclination in order to increase the respective relative lateral component movement in the posterior part, or decrease the lateral inclination in order to decrease the respective relative lateral component movement in the posterior part.
Laterally in the <i>anterior</i> region:	Decrease lateral inclination in order to increase the respective lateral component movement in the anterior part, or increase the lateral inclination in order to decrease the respective relative lateral component movement in the anterior part.

SIR HARRY BALDWIN'S COUNSEL.—Sir Harry Baldwin, in his presidential address at the annual meeting of the British Dentists' Hospital, recently held at 31, Camden Road, N.W.1, said: "Diseases of the gums and mouth are nowadays held to be one of the greatest causes of ill-health." In referring to the prevention of dental disease, he stated that this could be divided into three parts—suitable feedings, oral hygiene, and "a little dentistry at the right time." His contention was that the general public did not eat nearly enough vitamins. White wheat flour from which bread was made formed the staple food of two-thirds of the community, but the essential vitamins were extracted in the unnecessary process of whitening it. He advised all those who valued good teeth and health to eat wholemeal bread, and use wholemeal flour. Acid fruits should be eaten preferably after meals, to ensure a flow of saliva, which was nature's mouthwash, while *much more important than tooth-brushing was gum-brushing, as the gums must have friction if pyorrhea was to be prevented.*

Anomalies of the Teeth and Associated Parts*

WILLIAM W. WOODBURY, B.Sc., D.D.S., HALIFAX, N.S.



THE above caption is suggested as a fairly accurate description of the subject we are about to consider. Such anomalies occur in great diversity and in varying degrees of severity, from slight malformation or malposition of individual teeth to gross deformities of the jaws.

The treatment of a large proportion of these deformities would seem to be a logical and legitimate function of dentistry at the present stage of professional educational development, and is so recognized. Dental orthopedic or orthodontic methods, however, have their limitations and the necessity for the services of the surgeon in some cases is apparent. The physician also can often make a valuable contribution toward the understanding and remedying of these conditions, for the problem is not so limited as the rather restricted anatomical site would indicate. In many cases the best results are attained by the co-operation of both professions.

This problem might be approached from many possible angles. The dental approach has been very naturally from the standpoint of tooth relationship, or to use a dental term, from the standpoint of occlusion; occlusion as thus used signifying the typical relation existing between the teeth of the upper and lower dental arches or arcades when the jaws are closed. It is perfectly natural that in the past the dental approach should be from the standpoint of occlusion almost exclusively. Certain perversions of development might result in atypical tooth relations—in malocclusion as the dentist would describe it—or “crooked or irregular teeth,” in the language of the layman. Long ago it was found that persistent pressure brought to bear upon a tooth caused it to change its position; in other words that a tooth might be “straightened.” Without entering into the history of the subject it may be stated that this was being done 200 years ago. Naturally the man who was doing it was the man who was working about the teeth, who was filling up cavities caused by caries and who was devising, more or less successfully, artificial substitutes for teeth that had been lost. He was attempting this “straightening” or “regulating” only in rare instances previous to the last half century, and he approached it, as he approached almost all his work, as a mechanical procedure pure and simple. His day’s work consisted in replacing teeth or repairing parts of teeth. They were hard structures so he had to fabricate substitutes from hard substances, from

*Paper presented before the first joint meeting of the Halifax Medical and Halifax Dental Societies, 10th February, 1926.

bone, ivory, from metals, from porcelain or from soft substances which afterwards hardened. So his work was the work of a technician, an artificer. He thought in terms of teeth, individual teeth, and parts of teeth, and rows and arches of teeth; of teeth separately and teeth in relation to each other; finally of the teeth as a mechanism, as a machine whose chief function was the grinding of food. He was dealing with the ravages of disease but he thought chiefly in terms of teeth. And those who came to him for aid thought in terms of teeth, their repair, loss, replacement. Their demand on him was a mechanical demand, and the service expected of him was a mechanical service.

This preponderatingly mechanical attitude on the part of dentistry in its earlier development and its later swing away from mechanics, or perhaps more accurately toward other factors of a biological nature, should be of interest to a body of medical men. Probably these general tendencies would have been pretty much as they have been, from the nature of the work in the first place, and from the general development of biological and medical knowledge in the second place. But it is a matter of history that two medical contacts tended to confirm and accelerate each tendency. The fact that a medical school in Baltimore could not see its way clear to furnish instruction in Dentistry led to the establishment of a separate dental school in that city in 1839. The venture as such was a success and other separate dental schools followed. Thus the dental student was in large measure denied a contact that would have been a valuable corrective to the mechanical attitude that the nature of the bulk of his work imposed. This highly-specialized training led to rapid advances in technique until our second historical incident in the form of a paper early in the present century by the English surgeon, William Hunter, on "Septic Dentistry," which focused attention in a rather dramatic way on the fact, which was gradually becoming quite evident, that some beautiful restorations from a mechanical standpoint might be a menace to the patient.

This gradual change of emphasis has not been confined to the consideration of focal infection. The dental approach to anomalies of the teeth and jaws has undergone a somewhat similar change of late years, for we have come to see that a purely mechanical point of view tends to distort the perspective in what is essentially a biological problem. The means at our disposal so far for dealing with these conditions are largely mechanical, and mechanical procedure will probably for a very long time at least occupy a major position in treatment.

But the removal of an appendix might fairly be described as purely a mechanical procedure. Yet the problem presented by a case of appendicitis is not fundamentally a mechanical problem.¹ The means employed in treatment does not fix the status of the condition. In each

of these instances the problem presented by the condition and its treatment taken together might be described as biomechanical.

However, for the present let us grant to the dentist his dental approach, *i.e.*, via occlusion or tooth relationship. We have seen how naturally it has developed, in fact how inevitable it was that it should so develop. Is he likely to hold to it exclusively? Will it prove adequate in the long run? We think not. The consideration of the masticatory apparatus as a machine pure and simple, and of anomalies of tooth position as being an impairment of the efficiency of that machine, naturally lead to efforts at tooth readjustment in the direction of the perfecting, or at least improving, of the impaired mechanism. This carries with it the necessity for a mental standard of tooth relationship as a guide in the work of readjustment or realignment. This standard, until recent years, as revealed by the dental literature in this field, has been usually the most perfect specimen of tooth relationship, of occlusion, that selected skulls in the various museums of the country would afford.

Now it is a matter of clinical experience that, when the dental arch form or arch relationship is changed from a malformation or malrelation in the direction of an improvement of either, the form or relationship so brought about remains, in the majority of cases where ordinary judgment is exercised, greatly to the comfort of both patient and operator. In a certain proportion of cases, however, there is a marked tendency toward a return to the former condition or to another condition which may not be the former relation but, on the other hand, is not the relationship that was the goal of the treatment undertaken. These cases are of sufficient frequency in any orthodontic practice to give ample incentive to canvass carefully ideas that would appear to be basic in a consideration of such anomalies.

The man whose conception of tooth position and relation is purely mechanical will naturally seek a remedy along mechanical lines. If he does not achieve what he considers a perfect result he will probably blame his own technique, if he considers it faulty, or will look for something that has interfered with his technique, if he considers that it has been adequate. If he had only used a different sort of appliance or had manipulated the one he did use in another way, or if he had had better co-operation or less interference from his patient, the result would not have been thus and so.

Now only a very bold or very foolish person would tolerate in himself a state of mind where his own technical shortcomings would cease to be considered as a factor in his results, and we know that the attitude of the patient may be a very great help or a very great hindrance; but, on the other hand, the mechanics of treatment should not be asked to carry a greater burden of responsibility than the facts of the case would warrant.

We have come to see that the teeth retain their relationship and position in the arches not by virtue of their being solidly placed in hard bone and consequently fixed in position, but by virtue of a balance of forces. Tooth position and form of arch represent the sum total of the metabolic forces acting on the teeth. Bone may be hard to the touch but, except in certain pathological conditions, it is very responsive to forces acting upon it. We know that when a tooth is removed the space created actually begins to close. In other words the teeth on either side of the space begin to move. The bone gives way. We have not removed a unit in a static relationship of parts but we have disturbed a mobile equilibrium. Conklin,² in his "Heredity and Environment," says of living cells and organisms that they "are not static structure that are fixed and stable in character, but they are systems that are undergoing continual change. They are like the river, or the whirlpool, or the flame, which are never at two consecutive moments composed of the same particles, but which nevertheless maintain a constant general appearance; in short, they are complex systems in dynamic equilibrium."

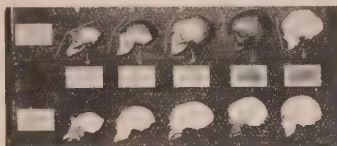
Likewise the forces holding the dental arch in position are never at rest. And the catalogue of these forces is not exhausted by enumerating the more obvious and ponderable muscle pressures of tongue, lip, and cheek, and the thousands of daily contacts of opposing teeth during mastication, and the contact of tooth with tooth in the same dental arch. But we must go further and visualize the surrounding tissues in all their complexity and manifold functional activity, and we must think of the integrating influence of circulation, and of nerve, and of endocrine activity.

When we once get this vision we will feel that when we have altered an arch form and find that it remains as we have molded it, we have simply succeeded in arriving at the form that is in harmony with the surrounding physiological processes. When we speak of normal occlusion we will not necessarily mean the finest specimen from an architectural standpoint that half a dozen museums can afford. We may very properly feel that such a standard is demanding a degree of perfection in the region of the jaws that is not found in the rest of the body of the individual. Our idea of normal will rather be a functional one. It will be the most satisfactory tooth relationship that will be maintained by the organism as a whole.

In the teeth themselves the jaws are furnished with a unique index to development. The dimensions of the teeth are established long before the jaws have developed sufficiently to allow of their eruption into typical alignment, and this typical alignment will only be achieved if growth and development of the bone carry through unhampered. Otherwise there will be crowding, distortion, irregularity. While our attention is likely to be centred on the teeth their malalignment is often just an

incident, a symptom of inhibition or other perversion of growth. A prominent genetist was recently quoted as saying that if the female human pelvis contained such structures as the teeth, degenerative influences would be as evident there as they are in the jaw bones.³ Be this as it may, it will surely be a fruitful inquiry to try to understand those forces that interfere with development.

You are familiar with the correlation pointed out by the anthropologist and comparative anatomist exhibiting the gradual recession, degeneration if you will, of the lower anterior part of the face accompanying brain development. An illustration of a series of anthropoid and human skulls oriented on the same craniometric basal line exhibits this very graphically. We will leave the interpretation to the student of evolution. We are here interested in the apparent striking tendency.



Slide 1.

Anthropoid (Ape Man of Java), Neanderthal, Cro-Magnon, Modern.
Part of an Exhibit in American Museum of Natural History, New York City.
From cut appearing in "Illustrated London News."

When we find a somewhat similar tendency manifesting itself in measurable degree in one species over a comparatively short period of time our interest is increased, and more especially when we find that it is our own species.

The following is quoted from a lecture delivered by Sir Arthur Keith, in 1924, at the request of the Dental Board of the United Kingdom. Sir Arthur says, in part:⁴

"Ten years ago, in order to make a more precise estimate of the nature and extent of the changes which I believed to be taking place in the palates and jaws of British people, I carried out the following inquiry. I took fifty ancient British skulls and fifty modern British skulls; in each group there were twenty-five skulls with male characteristics and twenty-five with female markings. The ancient skulls were of people who had been buried in England before the date of the Norman Conquest; the modern skulls were chiefly Londoners of the eighteenth and nineteenth centuries. In the scope of my survey I included not only the palate, teeth and jaws, but numerous points in the structure and development of the face, as well as the essential features

of the cranial walls. The result of this survey was to strengthen my conviction that definite changes of a measurable amount are affecting our teeth, jaws, noses, orbits, cheeks, and other points in the structural conformation of our faces. My inquiry, however, made me realize more clearly than I had done before that these changes were not affecting everyone. In skulls of ancient date all, save one of a man and two of women, had the incisor teeth so set that when the lower jaw was closed against the upper the crowns of the incisor teeth met edge to edge; in only these three did the lower incisors pass behind the upper, and thus had an overlapping or "scissors" bite. In all the modern skulls, without exception in man or woman, there was an overlap or scissors bite. In no ancient skull was there a pathological degree of contracted palate; four out of the twenty-five male skulls, and nine out of twenty-five modern female skulls, showed a recognizable degree of narrowing or contraction of the palate. Misplacement of the front teeth occurred with an equal degree of frequency in the skulls of modern date. The failure of the third molar teeth to form gives an index of the tendency to dental degeneration, for when a retrograde change sets in, the element of a series which is affected first and most is that which is the last to be formed. In the twenty-five ancient male skulls there should have been fifty upper third molars; there were only forty-four, there being six cases where this tooth had failed to form. Amongst the twenty-five ancient female skulls there were seven instances of failure to form and five instances where the molar had formed but failed to erupt. Thus we see that in pre-Norman times, before the eleventh century, there was a tendency among a few men, and in a considerable number of women, towards a reduction of the dental series. In my groups of modern skulls this tendency had become more widely spread. In the twenty-five modern male skulls—the subjects of my investigation—there were fifteen instances of undeveloped third molars in the upper jaw and five instances of arrested eruption. Amongst the female skulls the incidence was almost identical—fifteen third molars which had failed to develop and six where they had formed but were retained in the alveolus. Thus it will be seen that the changes I am speaking of do not affect everyone, but only a certain proportion of the population. Amongst collections of modern skulls we see teeth, jaws and faces as robustly and as symmetrically developed as in ancient times, but they occur in a decidedly diminished proportion.

"In figure 6 a normally developed and a contracted palate are contrasted from another point of view. They have been laid open along the middle line and oriented on a plane passing along the hard palate. In the normal palate the alveolar bone has a depth which brings its dental or free margin just below the 10 mm. line (fig. 6A); in the contracted palate the corresponding margin descends below the 20mm. line.

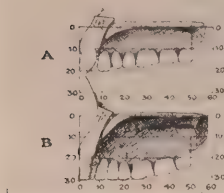


Fig. 6.—Comparison of a well-developed English palate (A) with one (B) showing a high degree of contraction. Both specimens have been laid open along the middle line; both are arranged on a horizontal base passing along the plane of the hard palate.

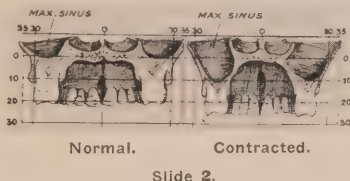


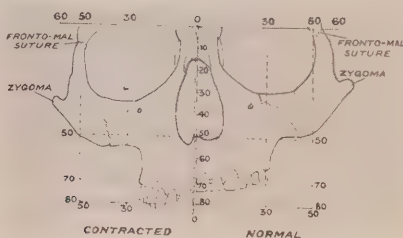
Fig. 7.—Coronal sections of a normal and of a contracted English palate. The sections were made distal to the first pair of molar teeth, and are viewed from behind.

After Sir Arthur Keith.

It may be thought that it is not the alveolar ridge carrying the teeth and their sockets which has descended, but the vault of the palate which has been raised. A series of measurements have shown me that the nasal cavities in cases of contracted palate are not more shallow than usual; their floor, formed by the hard palate, is at its normal level. Something has happened which causes the alveolar bone to grow and expand more in a vertical direction and less in an outward direction. This is particularly well seen in the premaxillary part of the palate—the part which forms the sockets for the upper incisor teeth. In the primitive form of the English palate (fig. 6A), the tip of the root of the central incisor reaches to the level of the palate, almost to the sill of the nasal aperture. In the contracted palate (fig. 6B) the alveolar bone, forming the incisor sockets, has expanded in a downward direction, carrying the tip of the incisor roots away from the sill of the nasal aperture. The result is that a peculiar sharp, and often deep, ledge of bone forms at the sill of the nasal aperture—a new structure—one which is never seen in ancient English skulls.

“Another instructive comparison of normal and contracted palates is represented by coronal sections, depicted in fig. 7. The specimens

have been oriented on the palatal plane and viewed from behind. One feature of these sections is seen in the downward expansion of the maxillary sinuses. In the normal palate these sinuses descend to the level of the palatal plane, but in the contracted palate they descend 10 mm. below this plane. It is true that the floor of the nasal passages is slightly narrower in the contracted than in the normal palate. Here again we see that the direction of growth of the alveolar bone, and the expansion of the maxillary sinuses, which follow the alveolar bone as the molar teeth erupt, has taken place in a more vertical direction than in the normal palate.



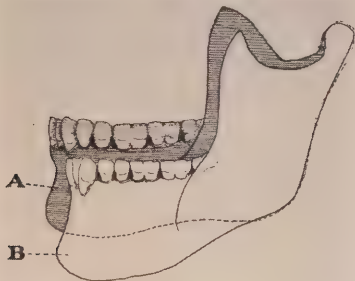
Slide 3.

Fig. 8.—The right half of the upper face of a skull in which the palate is contracted, brought into conjunction with the left half of the face of a skull in which the palate is normally developed.

After Sir Arthur Keith.

“The same result is apparent if we compare, as in fig. 8, cases of contracted and of normal palates as seen in a full-face view. In fig. 8 the right half of the face, from a case of contracted palate, has been brought into conjunction with the left half of a face of corresponding size, but in which the palate is of normal development. Both are oriented on a transverse line which passes through the nasion at the root of the nose. In the contracted face the nasal aperture is narrow and its sill descends rather lower than in the normal skull. In the contracted face the alveolar border descends 10 mm. lower than in the normal face; by the abnormal growth of the palate the upper face has become 10 mm. longer than in the rightly developed skull. In the one case the lateral margin of the alveolar border falls 5 mm. short of the 30 mm. (vertical) line; in the other—the normal face—it passes 2 mm. beyond the 30 mm. line (fig. 8). This downward movement of the alveolar border in the contracted face had been accompanied by a similar movement of the malar bone (fig. 8) and of the floor of the orbit. On the normal side, the fronto-malar junction lies immediately below the plane

of the nasion, but on the "contracted" side this suture lies 7 mm. lower down, the angular process of the frontal bending downwards to a much greater degree than on the normal side. On the contracted side, the lower or masseteric border of the malar bone descends below the sub-nasal line or plane; so do the parts which enter into the formation of the malo-maxillary suture. We see that contraction of the palate is but part of a general defective or altered growth of the whole face."



Slide 4.

Fig. 9.—(A) Mandible from a normally developed English face on which there has been superimposed another (B) from a case in which the palate was contracted.

After Sir Arthur Keith.

(This slide was shown without extended comment.)

The following from the concluding paragraph of a paper entitled "A Contribution to the Mechanism of Growth of the Human Face," prepared jointly by Sir Arthur Keith and George Campion,⁵ a British Orthodontist, and read before the British Society for the Study of Orthodontics in 1921, would appear to be in point here. These authors, after stressing the great need for continued intensive and painstaking investigation of the whole process of growth and development as applied to the face of the child, conclude as follows:—"We have shown enough to convince everyone that the so-called 'adenoid face,' the narrow, deep palatal arch, the irregular eruption of teeth, are not due to a simple mechanical cause such as the presence of enlarged tonsils, or of adenoid vegetations in the respiratory tidal way. We are dealing with an arrest or a disturbance of the elaborate machinery which underlies facial growth. We have produced evidence showing that this mechanism is influenced by the functional state of the pituitary and of the sexual organs. We regard enlargement of the tonsils, the growth of adenoid vegetations in the naso-pharynx, and disordered or irregular

growth of the jaws and face as manifestations of a single pathological state. What the exact nature of this underlying pathological condition may be we are not yet in a position to decide, but when we keep in mind the close relationship there is between bone-formation and bone-growth, and the action of the glands of internal secretion on the one hand, and the frequency with which a hypertrophy of the lymphoid system is accompanied by a defective formation of bone on the other, it is not difficult to believe that irregularities of the jaw and the development of adenoids may result from a nutritional disturbance. The explanation may come through the kind of research now being conducted by Colonal McCarrison, who has shown that a diet deficient in certain vitamines constituents will affect the normal working of the hormone growth systems of the body. Vitamines appear to act directly on the glands of internal secretion. We suspect that the defects which are so frequent in the growth of the English, or rather Nordic, face may ultimately prove to be the result of some deficiency or error in the dietary on which our infants and youths are reared. No doubt, too, our modern dietary is of a kind which leaves teeth, jaw and muscles of mastication imperfectly exercised. The physical stimuli which are necessary for the normal growth of bone are missing. This, too, may be a factor in gnathic degeneration."

This from Franz Keibel as found in Keibel & Mall's "Embryology," cannot but arrest the attention of anyone who is trying to understand the problem of development of the face:⁶

"Finally, the profile view of the head of a fetus 117 mm. in length may be shown (fig. 72), and in it I would draw especial attention to the projecting upper lip and the receding chin, . . . In the first half of the third month the two lips project about equally, but later the border of the upper lip, and the lip itself, grow more rapidly, so that in the fourth and fifth months it projects markedly beyond the lower lip; by a stronger growth of the lower jaw and lip this difference is gradually overcome in the sixth to the ninth months, but by a kind of inhibition process the early fetal arrangement may be retained in the adult to a marked degree."

We are also forced to realize our limitations, for if Keibel's suggestion as to the etiology of a certain type of dental deformity that is all too common is sound, what can we do about it? How can we at that early stage of development interfere in any way other than to see that the mother is surrounded with every care that modern hygiene has proven to be of most value?

This passing glance at the type of contribution embryology is making to our problem may very well direct our minds to the whole question of etiology. Twenty-five years ago writers discussing the causes of mal-

Slide 5.



Fig. 72.—Head of a fetus of 117 mm., in profile. Natural size. (After Retzius, l. c., Plate XVII, Fig. 10.)

From Keibel and Mall's "Human Embryology."

occlusion and dental anomalies in general had no difficulty in dividing their etiologic factors into hereditary and acquired, and most of the conditions that could not be accounted for on a strictly mechanical basis were inherited. So also crowded dental arches were caused by the inheritance of small jaws and large teeth. If the teeth were spaced, large jaws and small teeth in the inheritance were responsible for the disharmony. But as knowledge covering the mechanism of inheritance spread and deepened, such easy explanations were not tenable. This presupposing inheritance as the cause of almost all dental anomalies was followed by a swing of the etiologic pendulum in the direction of environment. Not nature but nurture was the controlling factor. The mere suggestion of heredity was to some as the proverbial red rag to a bull. Throughout both of these phases there was evident a dogmatism and wealth of positive assertion that did not conduce to progress.

Of late years, fortunately, a more critical temper has been in evidence and current thought may well be reflected in the words of Lischer.⁷ He says, "Heredity, therefore, is not as definite a factor as formerly, though we must continue to regard it as of great importance in the study of organic continuity. . . . Furthermore, one phase of this vast theme stands out very prominently, viz., all dental research relative thereto, and thus far conducted, is entirely inadequate. For this reason alone we should pause long before boldly denying its probable "influence" in the causation of malocclusion of the teeth. Another very plausible reason why we should be less hasty in excluding the hereditary factors is, that many anomalies of other organs of the body (notably

the eyes, *e.g.*, errors of refraction, imbalance of the ocular muscles, etc.) are largely congenital and frequently transmitted from generation to generation. Surely, the teeth and jaws are not exempt from the "influences" which control such maldevelopments.

"Our present plight seems to be exactly this, we cannot explain to any general satisfaction" all the causes of malocclusion of the teeth without the help of some hereditary factors; "and on the other hand, we cannot assume the actuality of any such factor in the light of our present knowledge of heredity."

Although the foregoing phases of our subject have been dealt with in the most sketchy manner, lack of time at this juncture demands the briefest possible mention of other matters that are at least of equal importance. Tied up intimately with the whole question of heredity is the Law of Variation, and within the spread of normal variation we will find the typl or typical form. Surely the typical in this sense is a saner mental standard to apply to the individual in arriving at a diagnosis, than the rigid perfection of the selected specimen. And in applying this typical form as a mental standard we must remember always that after we have dealt with the case and dismissed it as cured Nature will come along and apply her own standard which will be a functional one. So our interest in variation will not be wholly in differences as between one individual and another, but even more especially in the interrelation and interdependence of organs and tissues within that one individual—the Correlative Variation of the biologist.

Cuvier's great contribution to biology—the Principle of Harmonious Development—has its place here. When it enters our field, however, it must come hand in hand with Correlative Variation and largely divested of the morphological rigidity with which the comparative anatomist has quite legitimately clothed it for use in his own work; although it is interesting to note, as Russell observes, that "Cuvier studied structure and function together, even gave function the primacy."⁸

When we come to think of variation of function we are not far removed from habit. And our first thought of it should not be a pathological one; we should not think first of "bad habits." We will recognize habit as "the tendency to repetition," and as such "a normal manifestation of living tissue." "This intrinsic characteristic of all structures to repeat activity 'simplifies movements, makes them more accurate and lessens fatigue'." From this point of view "pernicious habit is an expression of a natural phenomenon gone wrong."⁹

The great truths of growth and development must be the constant mental companions of one who would essay the task of recognizing the beginnings of abnormality in the growing child. Our understanding of the manifestations of growth, year by year, will often show us that

SIR ARTHUR KEITH'S FINDINGS TABULATED.

50 ANCIENT BRITISH SKULLS (Before the Conquest.) 25 MALE. 25 FEMALE.		50 MODERN BRITISH SKULLS (Londoners of the 18th and 19th Centuries.) 25 MALE. 25 FEMALE.	
Edge to Edge Bite	{ 24 " "	23 "	NONE.
(The overlapping of the upper over the lower incisors is to-day considered "normal.")		NONE.	
Contracted Palate	{ NONE.	4	9
Up. 3rd Molars			
Should Total	{ 50	50	50
Failure to form	{ 6	15	15
Failure to erupt	{	5	6

apparent disharmonies are sometimes just stages of development. The better we understand this vast theme in its local application, and it must not be applied too locally either, the better will we be able to decide how to treat, when to treat and, what is often more important, when *not* to treat.

And finally, the study of the physiology of the oral tissue yields its contribution. How anxious we are to learn what we can of the growth of bone. Does Wolff's Law of Bone Formation hold? Does the amount of growth in bone depend on the need for it—to adapt the paraphrase of the late John B. Murphy, of Chicago, of Wolff's more extended definition? In how far do the recent criticisms of Jansen and others modify this? Also we cannot but note the great diversity as to developmental origin of tissues brought into closest proximity in the oral cavity. We also see that some, such as alveolar bone, seem to depend for their very life upon function (when the teeth are lost alveolar bone disappears), that others, the teeth themselves, appear to be quite non-functional as to development, their form laid down in almost an arbitrary way; while the remaining tissues—bone, vascular, muscular, etc.—occupy a middle position on this basis.

No attempt has been made in the foregoing to deal with the technical problems of treatment from the standpoint of dental orthopedics. They are, of course, of the greatest importance and naturally consume a large proportion of the thought and energy of anyone who attempts the treatment of these conditions. The development of the science of this field at the expense of the art would be vain indeed. Its present status of accomplishment is due in no small measure to those who have patiently developed appliances, and this will continue to be so. But it is submitted that for the solution of these problems as a health service we must bring to bear all the information we can from the field of science that deals with growth and development and all their aberrations. An attempt has been made in the foregoing to map out at least a part of this field.

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The Health of the Teeth

[The following Radio Talk was given by the Editor under the auspices of the Department of Extension, University of Toronto, through Radio Station CNRT, from King Edward Hotel, Toronto, on Friday, 21st May, 1926.]

THE Faculty of Dentistry of the University of Toronto is not only interested in the training of students that they may render a health service for the protection of the people, but the Faculty and the dental profession are also keenly interested in every movement to improve the health of the nation.

Every thoughtful person to-day will readily admit that the teeth, being an integral part of the body and served by the same blood stream and nervous system, are closely related to health. Not only are conditions of the system reflected in the state of the teeth, but dental diseases and mouth infection have a profound influence upon the general health; that is to say, disease germs are carried through the blood stream from the teeth to other parts of the body.

When a tooth becomes infected, it must be brought into a condition of health, and in many cases this is accomplished through treatment by the dentist. In other cases, however, when the condition will not yield to treatment, extraction is necessary. The loss of even a single tooth seriously affects the remaining teeth by allowing them to change their position. The teeth should also be preserved because good teeth beautify the face, and are important in speech.

The foundation of all public health work in these modern days is that of prevention. Preventive dentistry has made great progress in the last few years, and we are hoping that the establishment of the Faculty of Dentistry in the University will stimulate further interest in the study of the complex problems relating to the prevention of dental diseases.

As the teeth commence development before birth, it is necessary that the diet of the expectant mother should include those foods which contain the bone-forming elements, the teeth being part of the bony tissues of the body.

The development of the teeth continues right through early childhood and until twenty years of age, but the greatest development occurs during the early years of life.

It is essential that the child be given the right food, and that the food be of such a form as to require the use of the teeth in mastication; crusts of bread, for instance, rather than the soft milk-soaked foods that sometimes wholly comprise the diet of the child. Whole wheat bread is more fibrous, and to be chosen for health rather than white bread.

The thorough mastication of food is imperative. This is the natural form of exercise for the jaws, bringing about the proper blood supply. In this way the gums are more healthy and the teeth are kept clean by nature's method. Mastication is the first step in digestion, and many cases of indigestion are the result of insufficient mastication. In many homes the meal hour is the only period when all of the members of the family are together, and a happy, cheerful atmosphere is a great aid to good digestion. The meal time is also a very convenient hour to scold the kiddies, but this should be avoided. Never allow complaining or scolding to take place during the meal. Indigestion results in a condition of the saliva that is more conducive to dental decay.

To prevent dental disease, the diet should not only be a form to require thorough chewing, but also contain foods high in bone-forming elements. These foods include: milk (of which there is none better), fruits and vegetables of all kinds. Much of the calcium is lost when vegetables are boiled. Many of them may with benefit be eaten raw in salads or in sandwiches, such as grated carrots and brown bread. It is important to remember that skins of vegetables often contain most of the lime, and if they are peeled before cooking much of their value is lost. There is a modern tendency towards sweets and pastries which is not only bad for the general health, but also for the teeth, and these should be used very moderately. Children should be encouraged to spend their pocket money upon fruits rather than on candies.

If we had inherited strong, healthy bodies, lived a simple life, and always obeyed the laws of health, doubtless we would be free from dental disease, and it would not be necessary for us to use a tooth brush or resort to artificial means of cleansing the teeth. Under modern conditions of living, however, it is necessary that we use the tooth brush and dentifrice at least morning and night, being careful not to brush the teeth crosswise, as this results in injury. Do not attempt to clean both upper and lower teeth at the same time. Brush the upper teeth first, putting the brush well up on the gums, sweeping it down over the teeth, both inside and outside. Do not brush from the teeth to the gums, but use only the one direction. Next brush the lower teeth, again using one direction, passing the brush from the gums to the teeth, and not from the teeth to the gums. Repeat this process both at the sides and front, inside and outside. Use a wrist motion, rather than a shoulder motion. The grinding surfaces of the teeth, both upper and lower, should then be brushed, in which case a circular or crosswise motion of the brush may be used.

An important aid in tooth cleansing is dental floss, which may be secured at any drug store. This is a flattened piece of floss that may be gently inserted between the teeth and may be drawn from side to

side, first on one tooth and then on the other, thus cleansing the surfaces between the teeth which cannot be reached with the brush, but which most frequently decay. In using floss silk, be careful not to make the gums bleed or injure them in any way. The floss should be used once a day.

Of great importance is the use of a mouth wash immediately at the close of each meal. Use a glass of warm water or mild antiseptic, taking a mouthful, closing the teeth, and, by the action of the cheeks, draw the solution back and forward with a pumping motion, thus forcing it into crevices and between the teeth. This should be repeated until the glass is used.

Another important factor in prevention is the necessity for regular examination by your dentist. When pain occurs in teeth, it is usually an indication that the condition is far advanced and means a great deal of time, pain and expense in treatment. This may be avoided by regular and systematic examination by your dentist, who, upon request, will be glad to notify you from time to time when you should return for examination. This will not only save expense and suffering, but, more important still, it will help you save your teeth.

The members of the dental profession support every form of public service, and stand ready to co-operate in the organization of public dental services for those who are unable to pay ordinary dental fees. These services include school dental services, dental departments in hospitals and factory dental clinics.

The dental profession realizes that possibly its greatest contribution is in the broadcasting of knowledge to the people in methods of prevention. The campaign this year is to culminate in a Dental Health Day, which is being organized by the Ontario Department of Health. Dental Health Day is to be Wednesday, the 20th October, and the Ontario Dental Association, the Ontario Medical Association and numerous other health, educational and public bodies are co-operating.

The dentists of Ontario are undertaking to give free examination and advice to all who desire it on that day. Special competitions, health carnivals and demonstrations are being arranged for in the schools of the province. Special moving picture films are being prepared, and organizations such as women's institutes, service clubs, the Canadian Red Cross, home and school clubs, and other welfare organizations are co-operating. The citizens of Ontario are invited by the Provincial Department of Health to unite in making Dental Health Day a great success. May I urge all members of my radio audience to remember the day—Wednesday, October 20th, 1926—and lend their help to improving the health of the people of Ontario by the elimination of dental disease.

Eastern Ontario Dental Association



LGONQUIN HOTEL, Stanley Island, Cornwall, Ont.
Wednesday, Thursday and Friday, June 23rd, 24th and
25th, 1926. Forty-ninth annual meeting. Forty-nine years
of usefulness. The E.O.D.A. is the oldest sectional Dental
Society in Ontario, and for half a century has been a really important
factor in shaping the policy of the R.C.D.S. Its importance as an
entity, and as the parliament of District No. 1, is sometimes forgotten
by its constituents. You are a member of this parliament; we need you
as an active member.

Last year was a record for attendance, despite the bad weather, and
we had a great time.

The same men, the dentists of Cornwall, are again in charge of local
arrangements and this is absolute assurance of a work well done.

We are concentrating on a few subjects and these will be dealt with
exhaustively.

Dr. A. E. Webster and Dr. R. J. Read will have the subject of
"Focal Infection."

Drs. Snell, J. S. Girvin and W. H. Woodrow, "Periodontia."

Drs. D. C. W. Coupland and W. A. Armstrong, "Exodontia."

Dr. A. W. Ellis will be with us in the interests of the Canadian
Oral Hygiene Committee.

Dean Seccombe, of the Faculty of Dentistry, University of Toronto
and Dr. Conboy, Director of Dental Services, will be with us in their
respective capacities.

Every possible arrangement is being made for the entertainment of
the ladies, and the Island is a great spot for the youngsters.

An orchestra will be in attendance on Thursday and Friday evenings.

Bring your golf clubs, tennis racquets, fishing rods and dancing
slippers. These diversions, and the freedom of the Island, are all yours
for the one price. Room and board, garage and ferry thrown in—
adults, \$5.00 per day; children, \$2.50.

In a profession so full of so many totally new important things, post-
graduate courses such as conventions, are an essential equipment for
dealing with the every-day problems of practice. Their value is
measured by the increased efficiency, by the self-confidence that comes
from knowledge and the sheer interest and pleasure you will get out
of them.

W. B. CAVANAGH,

E. B. BAKER,

GEO. GORRELL,

Programme Committee



This Department is Edited by
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EFFECTS OF CERTAIN WATERS ON TOOTH ENAMEL.

DENTAL and medical practitioners have for many years been united in their research problems relating to body ailments. Now it looks as though the water works chemists and engineers must add their efforts to those of the dental and medical professions, for it would appear likely that many cases of mottled enamel can be traced to the use of certain waters.

In a paper published in the *Water Works Engineering*, January, 1926, and reprinted in *The International Journal of Orthodontia*, Frederick S. McKay, D.D.S., New York City, directs attention to many cases of mottled teeth which he finds are directly traceable to the water supply. He says: "The amazing peculiarity of mottled enamel which makes it distinct and separate from any other dental defect, is that it occurs only in definite geographical areas of which there are several in this country, and the further distressing fact that in such afflicted districts practically all children who are born there and who live there during the period of enamel growth will, when the teeth erupt into the mouth, present this defect. The typical defect is characterized by the presence of a dark brown discoloration, even black in some cases, the distressing feature being that it is located right on the most conspicuous portion of the tooth; as a rule limited to the upper anterior teeth; rarely on the lowers, and practically never on the under or back surfaces. . . . Communities have been examined where 90 and even 100 per cent. of native children have mottled teeth, and it should be further emphasized that in a community which has definitely been branded as "afflicted" the percentage of occurrence is usually around 90 among natives. In other words, if the defect exists at all it is practically universal among natives and those who come there during early infancy."

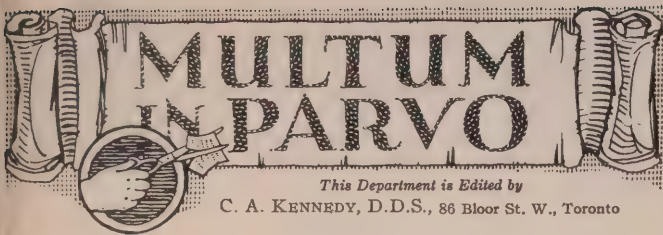
The uniformity of this defect points to a single causative factor—most probably the water. Just what chemical constituent is responsible has yet to be determined. It is possible that more than one element is involved in producing the results already noted. As illustrative of the

geographical areas involved, Dr. McKay reports that a careful survey of the children of the Pikes Peak region was made. Here the enamel defect was found to be uniformly present in from 88 to 90 per cent. of native children. The water supply in this district is derived from the Pikes Peak watershed from melting snow gathered into a series of lakes or basins, and is of unusual purity both as regards the organic as well as chemical compounds. The principal part of the food supply is imported. Surrounding territories, deriving water from the same source as Pikes Peak, showed the same proportion of mottled teeth. Others, deriving the water supply from other sources than the mountain range, were immune. Obviously there is something in the water that causes the discoloration of the teeth, yet careful analysis fails to uncover it.

Examination of a coal mining camp in Southern Colorado showed that the percentage of defects reached 100, involving every person native to this place. In this area the water for domestic purposes is derived from a coal mine—a notable contrast to the snow areas of the mountain ranges, yet the results being substantially the same. All food, including milk, is imported into this mining area. In surrounding towns certain adults exhibit mottled teeth similar to those of the mining area, but these cases are accounted for through the early custom of importing water in barrels from the mines. This practice was later discontinued.

Many illustrations are given by Dr. McKay, all of which go to show that the waters associated with the defect of the tooth enamel are not necessarily derived from any particular source, but rather that any water which contains some certain ingredient or combination of ingredients, or which is perhaps lacking in some ingredient, will produce mottled enamel if such water is used during the period of enamel growth regardless of the source from which it is derived. Some Indian tribes having no community life, hence using no wells but securing all water for domestic use from rivers, will show 100 per cent. enamel defects. Apparently, therefore, well-water is not entirely responsible for the condition, although the water supplied by artesian wells in many districts caused discolored teeth. It may be shown that enamel defects in certain areas were first observed after the introduction of artesian wells.

From the mass of data supplied by Dr. McKay, including as he does analytical reports of the various waters, it is extremely difficult to draw any helpful inferences. The location of the water supply seems irrelevant, because mountain-range water and mine water produce similar results. Again, the chemical purity seems to have little or no relation to the results produced, yet undoubtedly the water is the source of the mottled teeth. Here, then, is a problem for our research workers.



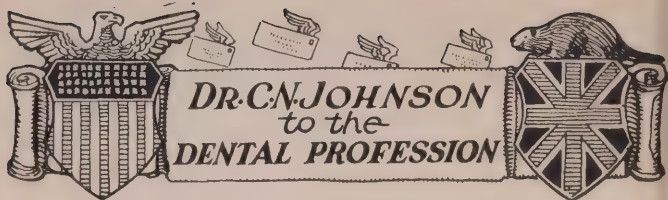
A "DOUBLE-BARRELLED" METHOD OF TAKING A BITE IN AN EDENTULOUS MOUTH.—It is usually found that the "bite" is too keen at the ends of the jaw—often the wax is entirely bitten through—so that the hard-bite plates come in contact with each other at the ends. It is, of course, necessary and desirable that there be an *even* thickness all round the biting surface of homogeneously soft wax. To accomplish this, remove the bite-plates from the mouth, mount them on an articulator frame to the height of the bite given. Remove the wax, when it will be seen how much to cut down, or build up the lower bite-plate in order to get an even distance all round between the bite-plates. Having done this, take another "bite" with freshly-softened wax, when it will be found that the bite pressure will be evenly distributed all round.—*British Dental Journal*.

COLD WATER THERAPEUTICS.—With regard to treatment of the mouth after extractions, it is invariably the rule to advise hot fomentations or hot lotions of antiseptic mouthwash; in other words, the fashion is to use heat as the medium for reduction of inflammatory conditions, but let us not forget that cold can achieve the same end, and in some cases much better, although cold water in the mouth is rigidly excluded, probably on account of nerves exposed in other teeth, and general discomfort to the patient.

Heat reduces inflammation by drawing to the spot the white blood corpuscles, but cold reduces it mechanically; and, speaking from experience, a cold mouthwash has very often given more comfort to the patient than a hot one. I knew a very successful practitioner who never allowed a drop of hot water near the patient's glass.—*C. Potter*.

TO CLEAN AMALGAM MORTARS.—When theses have a dull finish there is nothing better for this purpose than a dry carborundum stone in the engine. Incidentally this is cleaned likewise.

AN IDEAL PIN.—An ideal pin for incisal retention in an interior inlay is obtained by using the platinum pin in a broken or discarded pin facing.



Florida

YES, I've been to Florida—for the first time. I went without enthusiasm, as far as the place was concerned. I went because some members of my family had been living there for several years and I wanted to see them. But the place—well, I was strangely phlegmatic about it. I had little taste for the lies I had heard spoken of it. I declared I would resolutely keep away from Florida till they stopped telling these lies. But one day I concluded I could wait no longer, and so I boarded the train. I left the north under a heavy blanket of snow, and I almost literally jumped from a snowbank into a mid-summer garden. It was March—the month of boisterous gales. A few days after I left Chicago they had a blizzard. When I heard of it I could scarce believe it. In Florida I saw nothing but the most balmy weather, with glorious sunshine—such sunshine as I had never seen before in March—or in any other month for that matter. Except, of course, in the tropics. And that Florida sky!—I have run the gamut from Prince Rupert, in the north, down across the Equator, as far south as the lower end of Australia, and there is a quality to the tropical sky that obtains nowhere else. I am not unmindful of the glory of a northern sky on a star-studded night in mid-winter, with the white, fleecy mantle of snow sparkling in the moonlight in unison with the blinking stars overhead, and I could worship it as I look at it, but the tropical sky—you couldn't sit out bareheaded at midnight to watch the northern sky like you can the southern sky. It chanced to be moonlight when I was in Florida, and the full glory of it can never be told—at least I am not going to mock the real thing by my feeble attempts to describe it.

But about these lies I had heard—men getting fabulous sums for a mere shinplaster of land—land with nothing but sand or palm trees or palmetto on it. Well, I found that they were not lies at all. My first disillusionment came the day after I arrived. I drove out of town, less than a mile, to see an old friend of mine who owned a tract of land on the ocean. He had used it as a winter residence for more than thirty years, and he really did not know how much there was of it. We walked down through the estate and saw all kinds of tropical fruit and

any rare plants. Much of it is still jungle, and some of it has never been trod by the foot of man. Naturally I tried to estimate in my mind the value of this property—everybody who comes to Florida falls into the habit of estimating the value of land. I was floundering in a sea of uncertainty, not caring to broach the subject to him, when he casually remarked that he had that day been offered fifteen million dollars cash for it! Shades of the —— but I will not express an opinion on this matter, nor shall I predict anything about the future of Florida. Only this: the days of the wild and speculative land boom are past, and the sane and sensible men of Florida are heartily glad of it. Never again will a man buy a lot for \$6,000 and sell it in a few months for \$80,000, as was done a short distance from where I was visiting. Nor pay \$600 for a lot and subsequently sell it for \$150,000, as was done in another instance, etc., etc. Neither will all of the mammoth and magnificent hotels which have been built be filled immediately—"it can't be done." I saw one hotel with a lounge room luxuriously furnished which was fully two hundred feet each way, and everything else in keeping. I saw not one or two or a few of these hotels, but many of them, and all furnished lavishly. And they are still building—building furiously. To-day there are not enough private residences to house the people properly. You drive by an old shack where you think they may, in a pinch, house a mule, and you find that somebody lives in it. You see a tent which you imagine was pitched to cover a Ford—somebody lives in it. You look at what appears to be an abandoned barn—at least a barn that would be abandoned in the north—somebody lives in it. And all are apparently living in these structures happily. But the people of Florida must be better housed than this, and they will be, because the State is surely destined to become a stable commonwealth, unaffected by the lurid propaganda which has been launched against it in certain sections of the country.

More and more the people of the north will want to go to this land which furnishes them with summer during January, February and March; and more and more the legitimate business of Florida will be stabilized so that it will function the year round. Because there is a legitimate business to be done there, and it is being fostered by the sensible people living there who deplore more than anyone the feverish speculation which has helped to give Florida a questionable name. Florida is almost the last pioneer State in the Union, and it is rapidly passing the pioneer stage—but I promised not to predict about Florida—it is unsafe. Because I hold that no man, however wise he may be, can tell with certainty just what the future of Florida will be. Of only one thing I am certain; that Florida has a future, and a very promising one. You can feel it in the air when you are there, and let it be said in all seriousness that it is not all "hot air"—remember that.

This does not mean that I, personally, would care to live in Florida for any length of time. It was bred in my very bones to love a changeable climate. At times—appropriate times—I long for the wild and boisterous north wind, carrying a tang in it, and splashing a blizzard of snow in my face. I like to fight the elements in their maddest mood; and there is nothing that appeals to me like a raging storm. No, I would not care for the continuous softness of this southern clime. I want action—vigorous, virile, and sometimes even tempestuous action.

And the climate I really like is this—where the voices of loved ones vibrate through the air, whether in Florida, or California, or Chicago or near the North Pole (not too near), where in the evening, after the day's work, the familiar notes of family and friends mingle by the fireside of the old home; where there is the rustle of the leaves by the window in the summer, and the sweep of the snow in the winter—but all of this is insignificant and unimportant. There are so few people who like what I like, and so Florida will flourish.

C. H. Johnson

“BITE-TAKING” AND “TRYING-IN.”—In taking a “bite” or “trying-in” teeth, always have the patient standing up in front of the operator, in a perfectly easy and natural position. A patient is more likely to “bite” correctly than when the head is leaning back in the head-rest of the chair. The centre of the face, the slope of the teeth and the “height” of the “bite” can also be much more accurately determined.—*British Dental Journal*.

PAIN FROM LOWER DENTURE.—The trouble may be due to a pressure on the nerve trunks where they emerge from the mental foramina. Locate these foramina by palpating with a finger in the bicuspid area. If you cannot be sure of the location in this way, select the point where you think it is, attach a small opaque object and x-ray. When the foramina are located, scrape the impression liberally, extending both mesially and distally (but especially distally) from these points. This will relieve the pressure upon the nerve trunk and provide for free circulation of the blood supply to the denture area. As a matter of fact, I think this should be done in practically all dentures, whether or not there is complaint of any discomfort.

Oral Health

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No. 6

EDITORIAL

Articulation in Dentistry

WHEN disease occurs in the mouth, as in any part of the body, it is a clear indication that physiological balance has been destroyed. In other words, either from the standpoint of chemistry or of physics or of both, equilibrium has been seriously disturbed, resulting in disease.

In such cases the practice of dentistry is in effect to change the oral conditions from pathological to physiological, restoring healthy function. This may be effected by simply removing the cause. The removal of infection may entail extended treatment or possibly require resort to Dental Surgery.

When healthy conditions have been restored the case may require extensive operative or prosthetic service to restore function without overstress or understress. The use of what is popularly known as an

"anatomical" articulator is an essential aid to the Dentist in artificial restoring lost tooth structure, in re-establishing balanced occlusion in orthodontic treatment.

Many practitioners associate the articulator with prosthetic restorations only, but it is really an instrument that is an essential in every branch of dental practice.

This view is well exemplified in the following expressions received from members of the profession who are qualified to speak authoritatively concerning the several branches referred to:

Dr. W. E. Cummer.—"It is well known in the dental profession that a working knowledge of (a) the habitual mandibular movements of the patient, (b) of their reproduction in casts properly mounted on a suitable articulator which is adjustable for these movements, and (c) of the proper form and arrangement of artificial teeth to harmonize with their movements, is essential in Full Denture Service, in which branch, associated with the names of Christianson, Snow, Gys-Hanau, and others, the work has had almost its entire development.

"It is, however, not as well known that these principles and their practical application are, if anything, more important in establishing health dental function in those branches of dental practice in which the entire or partial complement of natural teeth remain in the mouth of the patient requiring dental service.

"In Denture Service for the edentulous patient, teeth chosen and arranged at variance with habitual mandibular movements will result in various degrees of trauma; this is, however, reflected chiefly against the tissue next to the periphery of these dentures, and a proportionate injury is caused which is not ordinarily serious.

"In Denture Service for the semi-edentulous mouth, whether in the form of a partial denture, a bridge, or even an extensive intra-oral restoration, the traumatic forces are directed against two or more retaining, supporting, or abutment teeth, and, in turn, to the periodontium and bone of the teeth affected, causing a dental injury which is often serious. As will be seen, this applies, in an equal degree, to the treatment of other dental conditions. It is, therefore, obvious, in order that public dental health may be maintained, that the principles of articulation as now understood must be given full application in all of these branches of dental service."

Dr. J. A. Bothwell.—"For many years Full Denture Prosthesis was carried on in a more or less haphazard manner, but to-day better denture service is demanded, and the only way it can be supplied is by a more thorough study of articulation by every member of the profession."

Dr. Harold K. Box.—"I am using an articulator constantly in my practice and find it of value in the treatment of periodontal diseases and also in Preventive Periodontology as a valuable aid in diagnosis.

Dr. Vernon H. Fisk.—"More recently in my practice as an Orthodontist I have been using an articulator as an aid in diagnosis and also in progressive studies as treatment proceeds, and have found it a valuable aid in establishing balanced occlusion."

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Fraternity the Cry of the Age

THE cry of the age is more for fraternity than for charity. If one exists, the other will follow, or better still, will not be needed.

Dr. Henry D. Chapin.



THE CLINIC CLUB OF THE LONDON DENTAL SOCIETY.

This Club gave a very complete and instructive progressive clinic upon the subject of Amalgam at the Annual Convention of the Ontario Dental Association, May, 1926.

ORAL HEALTH

*A JOURNAL THAT STANDS FOR THE OUNCE OF
PREVENTION AS WELL AS THE POUND OF CURE*



Vol. 16

TORONTO, JULY, 1926

No 7

Ontario Dental Association Annual Convention, 1926

THE Fifty-Ninth Annual Convention of the Ontario Dental Association was held at the King Edward Hotel, Toronto, May 17 to 20, 1926. It was well attended, showing a registration of 561 members and 58 guests, including a number of dentists who graduated from the Royal College of Dental Surgeons and are now practising outside the Province.

Monday morning, May 27, was given over to registration, and the Convention was officially opened at 2 o'clock on Monday afternoon. The members of the Association were the guests of the Royal College of Dental Surgeons of Ontario at a delightful reception held at Hart House, University of Toronto, on Monday evening, when the dentists had the opportunity of meeting Sir Robert and Lady Falconer. The Re-union Dinner took place on Tuesday at 12.30, with Sir George E. Foster as the special speaker. He gave an address on "The League of Nations." About three hundred attended the Dinner Dance on Tuesday evening and enjoyed the excellent programme provided. The Association and the Toronto Kiwanis Club held a joint Luncheon on Wednesday at noon, when Dr. Fred J. Conboy gave an address on "Enemies of Public Health." Wednesday evening was given over to Class Dinners and Theatre Parties. The Convention was brought to a conclusion with a very successful Golf Tournament at the Richmond Hill Golf Course, when eighty dentists took part in the competition. The Ladies' Entertainment Committee arranged special features for the ladies who accompanied the dentists.

The clinics were given on Tuesday, Wednesday and Thursday morning, when the following clinicians made most valuable contributions to the programme.

The Progressive Clinics and Committees

The London Dental Society.

Subject:—Amalgam.

Clinicians:—

Chairman: Dr. J. F. Giffen.

Section I.—Mixing.

Dr. J. F. Blair (Captain).

Dr. J. Hutchinson.

Dr. H. Taylor.

Section II.—Tamping.

Dr. E. W. Fuller (Captain).

Dr. V. Kelly.

Dr. Harold Windrum.

Section III.—Stepping Cavity Walls.

Dr. Ross Thomas (Captain).

Dr. G. N. Howden.

Dr. Fred Kennedy.

Section IV.—Orderly Condensation.

Dr. R. H. Sykes (Captain).

Dr. Duff Barnes.

Dr. A. E. Santo.

Section V.—Adjusting Matrix, removing matrix, carving and finishing.

Dr. J. O. McCutcheon (Captain).

Dr. W. Y. Hayden.

Dr. F. S. Radway.

The Department of Periodontology,
Faculty of Dentistry, University of
Toronto.

Subject:—Prevention and Treatment
of Periodontitis. (Correcting
Occlusion, Instrumentation, self
treatment.)

Clinicians:

Dr. Harold Keith Box (Captain).

Dr. Charles E. Sutton.

Dr. R. M. Box.

Dr. W. G. Trelford.

Dr. J. G. O'Neill.

The Toronto Academy of Dentistry.

Subject:—Appliances for the simpler
cases in Orthodontia.

Clinicians:

Dr. C. A. Kennedy (Captain).

Dr. G. Vernon Fisk.

Dr. S. S. Crouch.

Dr. C. A. Corrigan.

Dr. H. G. Bean.

Individual Clinics.

Full Denture Construction:

Dr. F. S. Weir.

X-Ray Interpretation:

Dr. H. H. Jackson.

Partial Dentures:

Dr. W. E. Cummer.

Dental Pulp Therapeutics:

Dr. A. E. Webster.

Children's Dentistry:

Dr. T. B. McCrum.

Crown and Bridge:

Dr. I. H. Ante.

Gold Inlays:

Dr. S. Clappison.

Local Anaesthesia:

Dr. F. F. Molt.

OFFICERS AND COMMITTEES.

The Officers in Charge of the Con-
vention were:

Hon. President:

W. G. Thompson, Hamilton, Ont.

President:

J. C. Devitt, Bowmanville, Ont.

Vice-President:

J. A. Bothwell, Toronto, Ont.

Archivist:

C. A. Kennedy, Toronto, Ont.

Secretary-Treasurer:

Fred J. Conboy, Spadina House,
Toronto, Ont.

Board of Governors and Programme
Committee:

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W. L. Chalmers, Toronto, Ont.

W. B. Amy, Toronto, Ont.

A. W. Winnett, Kingston, Ont.

T. F. Campbell, Galt, Ont.

A. W. Ellis, Toronto, Ont.

F. P. Moore, Hamilton, Ont.

H. A. Hoskin, Toronto, Ont.

R. J. Spratt, Barrie, Ont.

E. R. Zimmerman, Toronto, Ont.

H. Clark, Toronto, Ont.

Ladies' Committee:

Mrs. W. B. Amy.

Mrs. Wallace Seccombe.

Mrs. A. E. Webster.

Mrs. J. A. Bothwell.

Mrs. C. A. Kennedy.

Mrs. E. A. Paul.

Mrs. C. E. Brookes.

Mrs. W. L. Chalmers.

Mrs. A. W. Ellis.

Mrs. A. J. Broughton.

Mrs. E. L. Gausby.

Mrs. F. C. Husband.

Oral Hygiene Committee:

A. W. Ellis, Chairman.

J. C. Livett, Secretary.

F. C. Husband.

R. J. Reade.

H. E. Eaton.

Dentists' Legal Protective Associa-
tion:

Harold Clark, President.

W. E. Willmott, Secretary.

Wallace Seccombe.

R. G. McLean.

W. G. Thompson.

F. J. Conboy.

Expression of Appreciation

 HE President of the Association, Dr. J. C. Devitt, presided throughout the sessions and at the close of the Convention expressed his appreciation of the work of the officers and committees in making the 1926 Convention such a success. Dr. Devitt also thanked the members for their attendance and expressed the hope that all had enjoyed the meetings and found the Convention a very helpful one.

Upon resolution of Dr. Marshall, of Belleville, seconded by Dr. Trotter, of Toronto, the thanks of the members were tendered to all the officers and committees and to Dr. F. J. Conboy for his untiring efforts in making the Convention so successful. The motion was carried with enthusiastic applause.

* * *

In Memoriam

 R. W. E. WILLMOTT read the list of the licentiates of the Royal College of Dental Surgeons of Ontario who had died during the past year, as follows:

1869	C. H. Bosanko	Barrie
1869	Malcolm Nicholson	Toledo, Ohio
1874	S. F. B. Sefton	Toronto
1874	G. J. Clint	Winnipeg
1875	E. A. Teskey	Dutton
1878	W. F. B. Colter	Sarnia
1888	C. H. Fitton	Simcoe
1889	R. G. McLaughlin	Toronto
1894	H. P. Thompson	Edmonton
1897	H. S. Reynolds	Picton
1898	John Scott	Elmvale
1899	W. N. Cuthbert	Brantford
1899	W. W. Lemmon	Port Dover
1899	D. D. Ross	Calgary
1900	H. S. Bartlam	Toronto
1901	W. J. Norris	Brantford
1903	W. H. Milsap	Napanee
1903	A. A. Pinard	Ottawa
1903	J. B. Johnstone	Niagara Falls
1906	D. W. Massey	Vancouver
1909	D. C. Locke	Toronto
1916	W. E. Wray	Toronto
1921	W. J. Wilkey	London
1922	J. D. Bell	Fort Frances

President's Address

J. C. DEVITT, D.D.S., BOWMANVILLE.



R. Chairman, ladies and gentlemen: This, the 59th Annual Ontario Dental Convention, marks the end of another year of progress in a number of Dental Departments.

Some of the happenings in past years have startled us, and in some cases stampeded us, it may be, but it would seem that we have gained much knowledge and arrived at sane ideas from our experiences. The days of ruthless extractions have passed, for we know that in many cases the teeth that were condemned in the past can be treated and made safe and useful for many years to come.

With our improved x-ray interpretation and general health diagnosis we are better able to judge when to extract and when not to do so. Nature meant teeth to be where they are, and Nature is a wonderful help to us, with our improved scientific methods of root filling.

In my humble estimation, the crying need in dentistry to-day is the care of the children's teeth. Many of us have been side-stepping this work, partly because of the difficulties we encounter, and partly because of work required. Dr. Seccombe has the right idea in advocating Preventive Dentistry by the balanced food method, but the trouble lies in the fact that we get most of the cases too late.

I believe, for the present time, the solution is compulsory examination of each child from three years old up, by a competent and qualified person. I believe that it would be possible to eliminate 90% of all treatment and abscessed conditions if we could have our little patients regularly for examination and repair. We all know that most of our exposed nerves and abscessed conditions are due to the lack of early enough attention. What a boon to humanity it would be, if our children could be treated early enough to avoid all this trouble. Why not do the work when the cavity is small, avoiding pain to the little patient and giving the tooth a much better chance to stand up for the years required? Also, how many cases of Orthodontia would be avoided by this early attention. Thousands of temporary teeth would be left in place until the proper time, and many cases of Orthodontia would be avoided as a result. Our Committee has deemed it wise to have two outstanding men give papers and clinics on children's work. Also in this respect, the Oral Hygiene Committee has in the past year been doing good work.

The report to be presented by the Oral Hygiene Committee will show a decided advance in connection with the educational work of the Association. The Committee has performed an excellent service.

and the work includes the preparation of valuable oral hygiene material in the form of booklets, films, slides, charts and newspaper articles. These are available to any dentist who will undertake to give a dental health talk. A number of local Oral Hygiene Committees have been organized, and arrangements are being made for the Ontario Dental Health Day on October 20th, of this year. In connection with this important dental health activity, the Oral Hygiene Committee, at the request of the Ontario Department of Health, has consented to arrange for free dental examination and advice for all those who apply for it upon that day. Special school events are being planned by the teachers and nurses, and many service and social welfare clubs are arranging public meetings. We are pleased to know that the Ontario Medical Association, the School Health Section of the Ontario Educational Association, the Canadian Social Hygiene Council and many other educational and health organizations are co-operating with us in this effort to bring to the people a knowledge of the importance of dental health.

I desire, on behalf of the Association, to publicly express our appreciation of the work accomplished by Dr. Conboy, the Director of Dental Services, and to express to the Minister and Deputy Minister of Health our sincere thanks for the encouragement and support which they have given to this department. All the various activities of the dental department have been most successful, and in the dental inspection of the children, the establishment of public dental health services, and the educational activities, the progress made has been far beyond the expectation of the most enthusiastic supporter of the work.

Results obtained in Government Hospitals where an efficient dental service has been in operation, conclusively prove that even patients suffering from mental diseases can be greatly improved, and sometimes cured, by the removal of impacted teeth and dental infection. We are glad to know that the Ontario Government is seriously considering the organization of such a service in our Provincial Institutions. Recent figures published by the Canadian National Committee for Mental Hygiene indicate that in Ontario from November 1st, 1922, to October 31st, 1923, there were 2,266 patients admitted and only 869 improved or cured. When you consider that the gross current charges for the year were \$3,072,000, you will realize how important it is that mental diseases should be prevented or cured. We have conclusive evidence to substantiate the claim that modern dental treatment will prove of value in the prevention and treatment of patients suffering from nervous diseases.

Since the last meeting of the Association, the School of Dentistry of the Royal College of Dental Surgeons has become the Faculty of

Dentistry of the University of Toronto. We all hold the kindest remembrances of the old school, but feel sure the members of the profession will never regret their action in turning over to the University the School of Dentistry and its management. For fifty years the Faculty members, appointed from time to time by the R.C.D.S. laboured to raise and maintain the standards of dental education in the Province of Ontario, and we are all proud of what has been accomplished. Ontario to-day stands second to none in dental education.

The arrangement by which one of the Faculty members serves on the Board, and three Board members serve on the Faculty, will result in the closest possible co-operation and the maintenance of a spirit of harmony between the teaching and licensing bodies, which is so essential to progress. The many difficult problems incident to the transfer are being gradually solved, and though a year has not yet passed, the effects of the establishment of a Faculty within the University are in evidence, and we may look forward with confidence to further developments in dental education and research within the Province.

Another outstanding event in dentistry in Ontario this year is the enactment of the Dentistry Act, 1926, at the last meeting of the Legislature. Numerous changes in the old Act were required, because of the transfer of the School of Dentistry to the University. The new Act contains the following provisions, that are worthy of special mention:

1. The Province is divided into eight electoral districts, in place of seven as heretofore.
2. The annual fee is designated as an annual *Registration Fee* not exceeding ten dollars and payable the first of January in each year.
3. Where default in payment of the Annual Fee continues for one month, the license shall lapse and can be renewed only upon payment of arrears with an additional sum to be named, not exceeding ten dollars.
4. No person other than a licentiate shall use any title or description which implies that he practises dentistry in any branch, which contains the words "Dentist," "Dentistry," "Dental," or any derivative of any such word, or any letters, signs, or abbreviations, having the like significance.
5. No person other than the College or a University shall carry on any School, College or Laboratory, or other institution for imparting knowledge in any branch of dentistry.

6. No registered member of the College shall be liable to an action for negligence or malpractice, by reason of professional services requested or rendered, unless such action is commenced within six months from the date when such professional services terminated.

Your Board of Governors decided it was to the interest of all to have the Convention in one building, it being a great advantage to be able to park your hat and coat for the day and be able to hear all the papers, see the Clinics, attend the luncheons, and see the Exhibition Displays, so we selected the King Edward as the most suitable place.

Dr. Conboy has been appointed Secretary of the Association, and with his well-known ability has been a wonderful help to your Board of Governors in arranging the programme for this, we hope, our best Convention to date. Also, as Secretary of each Sub-Committee he has had much work to do, as well as a good share of the work in the "Booster." A suitable honorarium will be given him.

An auditor's system of book-keeping has been installed by the Board, and an audited statement will be sent to each member, or published in the Journal shortly after the Convention.

The programme of this Convention has been selected to suit the general practitioner, and the Board of Governors has arranged to have the best men available for the occasion.

I wish to thank the members of the Board of Governors and all others who have assisted in any way to help make our Convention attractive and instructive. I also wish to thank the members of the profession for the great honour given me at your Convention last year, as it is an honour indeed to be President of a professional body of such prominence as the Ontario Dental Association.

* * *

Dr. J. A. Bothwell, President Ontario Dental Association



R. BOTHWELL was unanimously elected President of the Association for Diamond Jubilee Year, 1927. He faithfully served as Secretary of the Association for many years and has been an important factor in its steady growth and

progress.

In accepting the Presidency, Dr. Bothwell said:

"I consider it a great honour to be called to the President's Chair of this Association. I assure you that I will put my shoulder to the wheel to make next year's Convention the best and biggest Convention we have ever held.



DR. JOHN A. BOTHWELL.

You have given me a good committee to work with—men who are all faithful workers, and with such a secretary as is Dr. Conboy, the programme next year will, we hope, be even better than this year. All I ask for is your co-operation. Bring along any fellow-members who are not with us this year and impress upon them that we are going to have a most interesting and instructive Convention in 1927.”

* * *

Ontario Oral Hygiene Committee

A. W. ELLIS, D.D.S., TORONTO.



T gives me pleasure to give the report of your Oral Hygiene Council. Those of you who were here last year got a fairly good glimpse of some of the activities of this Council. A great deal of my report has already been mentioned by our President in his address.

I may say that we are conceited enough to feel that we are the strong right arm of this Association. We are going up and down the highways and by-ways preaching the gospel of public dental health service, and prevention of dental disease. You have entrusted us with this service to the public and I hope the report will justify this wonderful and altruistic work which you have undertaken.

Let me tell you something of our organization.

You elect every year five men to form this Council. They in turn add to their numbers those who are interested in this work, as well as the chairman of every local Oral Hygiene Committee in the Province. We also have as a member the Director of Dental Services for the Province, Dr. F. J. Conboy. This Council appoints a sub-committee of three. This sub-committee is meeting constantly and consulting. They carry on the work and report back to the main committee several times a year. I might as well say here and now that we are very fortunate in having such a man as Dr. Conboy as Director of Dental Services for the Province. He at all times co-operates and consults with your Committee in the work which he undertakes. His hours are unlimited. He works day and night, Sundays and holidays; his heart is wholly in this work. His interest in the dental health welfare of the children and citizens of the Province is always supreme. If we as a profession are fortunate, the children in the schools, the inmates of public institutions, the Ontario Department of Health and the general public are doubly fortunate, in having such a man as the Director of Dental Services.

I cannot go on with this report without paying a tribute to our good friend, Dr. R. J. Reade. He works in the background, but very effectively. He was the Secretary of the Committee when it was first constituted, eighteen years ago. Also I wish to thank the other members of the Committee for their loyal assistance and work.

Then we are grateful to the Dentists throughout the Province for their loyal support and co-operation. They have made, without remuneration, a survey of 200,000 school children of the Province outside of Toronto. Another 100,000 examination charts are now ready to go out. In some places the members of the profession closed up their offices for several days and gave their full time to this dental health work.

We are proceeding very carefully with the organization of Hospital Departments, in order to ascertain the best form of organization to use. It is possible to establish a service that would be unfair to the local dentists, but this work of out-patient hospital clinics must go on, and we can assure you that nothing will be done without the consent and co-operation of the local dentists.

Dental Health Educational Campaign:

A very large number of dental health talks have been given and the entire supply of material has been in constant use. These talks were given to Service Clubs, women's organizations, school groups and public audiences; slides, motion pictures and charts have been supplied.

Dental Health Exhibits:

A very fine dental health display has been arranged. Some of the material was provided by the Department of Health and some by this Committee. It was used in connection with the Health Carnival at Hamilton, was shown at the Ontario Educational Association meeting and is available for other places where health carnivals are held.

Also there was a clinic at the Canadian National Exhibition. This was conducted under the Ontario Department of Health with the co-operation of the Toronto Academy of Dentistry. Anyone could go there and get free examination and advice as to their dental condition. I can assure you that this clinic was entirely ethical, and its educational value was very highly spoken of by a number of leading citizens of Canada.

Dental Health Material:

Moving picture films. The scenario for the new Ontario film has been prepared and is in the hands of the editor who is arranging for the staging of the picture. Three other films are now available, two being the property of this Council and one belonging to the Department of Health.

The Care of the Teeth—a booklet for children is being sent out regularly by the Department of Health.

The Dental Guide—five thousand copies of this booklet have been printed and are ready for distribution. It has been prepared to meet the needs of the adult population.

Information Useful for the Preparation of Public Dental Lectures—This book has been re-edited and is now in the hands of the printer. Three thousand copies will be secured.

The Nurses' and Teachers' Manual: We are greatly indebted to Dr. Livett for preparing this Manual. The copy is now ready for the printer. Two thousand copies will be ordered.

Newspaper Articles: One hundred copies of the eighty newspaper articles prepared by Dr. A. W. Coon have been multigraphed and are being distributed. Other newspaper articles are in course of preparation.

Lantern: A lantern and screen were purchased by the Council and they have been in constant use.

Slides: We have 10 sets of slides continually in circulation.

Charts: Four sets of charts are now in use and your Council is considering the advisability of preparing a large linen chart which will contain all the material needed for an Oral Hygiene talk.

Factory Posters: The Department of Health has agreed to prepare suitable posters for factory use. All this material is much used and is especially valuable to educate those who cannot read, those who can but won't, those who do but can't understand. Education in health matters must be by reiteration, reiteration, reiteration.

It is our aim to establish dental services in all Government hospitals and institutions. We want to do this so as not to interfere with any service already established. We would like the Association to put itself on record as favouring this. In some institutions with inmates of 1,200 or more the only dental service received is one half-day a week. We really need internes in these places, who would be under the supervision of the dentist in charge.

Dentistry in Unorganized Districts:

Satisfactory arrangements have been made in Northern Ontario, and the resident and travelling dentist will supply the need. Three Dental Associations have been organized and Oral Hygiene Committees appointed. Surveys are being conducted in various places and one "School Dental Service" has been organized.

School Dental Services:

Marked progress has been made in this branch of the work, and in all parts of the Province Boards of Education, Boards of Health and social welfare organizations are considering ways and means whereby dental treatment can be provided for those in need. The placing of Local School Medical Services under the control of the Medical Officer of Health has greatly stimulated the interest in dental treatment, as the department can send definite instructions to these health officers.

Instruction to Nurses in Training:

This work is being extended and a complete course of lectures has been prepared and is being sent to those who are undertaking to give the lectures. There will be no difficulty in arranging to have such instruction given in every hospital as soon as we are prepared to provide the teachers.

Our new slogan is "The Periodic Dental Examination and Dental Health Education of All Citizens." Formerly we concentrated on the school children. Now we try to reach the pre-school and post-school age. In the coming year we will gather statistics and compile information on how best to do this, the probable cost to those who can afford it, and the machinery to take care of those who cannot.

This new service is going to be one of the greatest factors in lessening the menace of dental disease.

There are other activities we would like to talk of, but time will not permit. At all times we are willing to help any dentist who is interested in this work, has a desire to assist, or any problem to solve in connection with his profession.

I must now pass on to the big event of the year, that of the Ontario Dental Health Day.

ONTARIO DENTAL HEALTH DAY.

The Ontario Department of Health working in co-operation with the Ontario Department of Education, the Ontario Medical Association, the Ontario Dental Association, the Ontario Press Association, the Ontario Red Cross Association, and a large number of service and social welfare organizations, has arranged for a Dental Health Day to be observed on Wednesday, October 20th, 1926.

A very instructive programme of health educational activities is being planned and an effort will be made to bring to the attention of the people the danger of neglecting mouth infections and the means whereby dental diseases may be prevented. Only proper and ethical means will be employed and the following are suggested:

Public meetings addressed by physicians, dentists and educationalists.

Newspaper articles—on preventive dentistry.

Motion picture films and dental health plays in theatres.

Talks, essays and art competitions in the Public, Separate and High Schools.

Addresses before Service Clubs, Home and School Clubs, Women's Institutes, etc.

Special references to dental health in connection with the mid-week week services in churches.

Window Displays—in drug stores, mouth toilet preparations; grocery and fruit stores, displaying proper diet.

Special notices in newspapers, on bill boards and in street cars. A number of companies manufacturing reliable products have agreed to co-operate in this connection.

Modern research and investigation clearly proves that many serious systemic diseases have their origin in unhealthy mouth conditions. In the recent dental survey in Ontario it was found that over ninety per cent. of the children are suffering from dental defects. Dental health education is absolutely essential, and the method of setting aside a special day for this purpose has proven most effective. The co-operation of every citizen in Ontario is urgently requested.

For the first time in history, so far as we can find out, universal free

examination and advice will be given. This is only possible if every dentist in a community will assist. If there is only one dentist in the locality, he can set aside the day and make these examinations and give the advice in his own office. When there are two or more it is thought better to conduct this clinic in a local centre such as a hospital, town hall or some other public building. In the case of industrial plants, they can, by arrangement, have this examination made at the factory. Every citizen, rich or poor, can have the benefit of this service for the one day, October 20th, 1926.

It is a big programme to put over, and your Committee is willing to assist in every way. Any information or material required can be obtained by getting in touch with the Director of Dental Services.

We ask each county, town and city, to organize an Oral Hygiene Committee. Then we want to call upon every dentist to take part. In this way all will participate on an equal basis. The Medical Health Officer in your district will assist in every way. Your Council feels that this will be a big step forward in education, leading toward the prevention of dental diseases and the correction of dental conditions, which might be a menace to the health of the citizens.

There is much more I would like to say. In the eighteen years of its existence your Oral Hygiene Council has been doing a little each year, and the accumulative effect has become almost irresistible force.

In conclusion we would like to express our appreciation of the valuable and altruistic services being rendered by dentists in all parts of the Province, who, without remuneration, are supplying treatment for patients and inmates in hospitals, homes and refuges, and thus doing much to make the lives of their less fortunate fellows more comfortable and happy.

We also desire to bring to your attention the fact that the Health Department is co-operating with the Council in every possible way. The supplies for the dental surveys, the expenses connected with sending out the slides, the films and the exhibit, are all provided by the Government. The Director of Dental Services has been given an extra stenographer that he may prepare the literature needed for the Dental Health Day, and by every available means the Department of Health is doing its utmost to assist in connection with this work. We feel that we have every reason to be grateful to the Honourable Dr. Forbes Godfrey, Minister of Health, and to Dr. W. J. Bell, Deputy Minister of Health, for this sympathetic co-operation.

I beg to move the adoption of this report and also to move the following resolution:

Whereas—Up to the present the attention of Dentistry has been centred mainly on the work of restoring lost dental tissue, and

Whereas—The only hope of real progress lies in the prevention of early control of dental disease, and

Whereas—Prevention, to be effective, must be applied early in the life of the individual,

It is

RESOLVED—That dental service must begin early and be systematic in order to obtain the maximum of prevention with the minimum of operative work, in order to properly educate the child in habits of Oral Hygiene; and be it

RESOLVED—That in the aim to attain the prevention of systemic and dental disease—

- (a) No defect is too slight to receive definite attention.
- (b) The temporary teeth should receive as much care as the permanent ones in order to promote the proper development of the jaws and the head, and to maintain function.
- (c) Particular care and attention should be given to developmental fissures, pits and grooves, whether occurring in primary or secondary teeth; and be it

RESOLVED—That the Ontario Dental Association declares for the principles and practice of Children's Dentistry, and maintains that the most effective dentistry that can be done for any individual is the service rendered between the second and fourteenth years of age, and be it further

RESOLVED—That this Society calls upon all dentists to uphold these fundamental principles, and to do everything possible to promote the practice of Children's Dentistry by professional and public education, and in public and private practice.

If these resolutions are adopted by the Ontario Dental Association it is moved that—

The Delegates of the Ontario Dental Association to the Canadian Dental Association next August in Halifax be instructed to present these resolutions for adoption by the Canadian Dental Association.

PRESIDENT: You have heard these motions, the one adopting the report and the other introducing the special resolutions.

DR. READE: I second both motions. I wish to say that if every member here could really appreciate everything contained in this report and how much it is doing for the citizens of Ontario and for every member of the Association he would wish to show his appreciation with me. I want to say that Dr. Ellis works every day of the year for the Oral Hygiene Committee and for the advancement of dentistry in Ontario.

The motions being put to the meeting were carried unanimously.

Report of Dean, Faculty of Dentistry, University of Toronto

WALLACE SECCOMBE, D.D.S.



SO much has happened in the Faculty of Dentistry during the past year, owing to our new relation with the University, that it seems hardly possible that such a comparatively brief period has elapsed since the transfer of the School of Dentistry.

Teaching of the following subjects has been transferred to the regular University departments: Biology and Comparative Dental Anatomy, Organic Chemistry, Inorganic Chemistry, Physiology, Pharmacy and Pharmacology.

Dr. Andrew Hunter of the University staff continues as head of the Department of Biochemistry and Dr. Watt remains in active charge of the teaching of Anatomy.

In the Department of Surgery, Dr. Clarence Starr is the Professor, while Dr. Ryerson gives the lectures and clinics in Surgery, and Dr. Risdon the course in Oral Surgery.

As the teaching of Chemistry was taken over by the University Department, Dr. Cowling was made Professor of Applied Chemistry, Physics and Metallurgy, giving the dental applications following the regular courses and developing an excellent experimental course in Applied Science.

Mr. Rous, a graduate of the Faculty of Applied Science and Engineering, is assisting Dr. Cowling and acting as Secretary of the Faculty.

Dr. Willmott devotes one-half his time to teaching in the Department of Prosthesis, and one-half to his duties as Secretary of the Board of Directors of the Royal College of Dental Surgeons.

The principle has been adopted that in every subject, whether the work is given in the Dental Building or elsewhere, the Faculty of Dentistry has the right to determine what the course of study shall be. This will ensure the definite application of the sciences to Dentistry, and while giving a broader foundation, will develop better dental practitioners having a keen interest in further study and research.

A short course in Public Speaking given by Prof. W. H. Greaves of Victoria College was instituted this session for fifth year students, and seemed to be much appreciated, especially by those who undertook the work in smaller groups.

The curriculum of the First Year conforms to that of First Year Medicine. French has been discontinued and lectures in Science and

Civilization added. The object has been to permit the transfer of students from Medicine to Dentistry and from Dentistry to Medicine at the end of the First Year, provided they hold the necessary preliminary requirements.

Notice has been given that in addition to Pass Matriculation, Honours Matriculation in certain prescribed subjects will be required for entrance to Dentistry in 1927.

Eight dental practitioners served on the Faculty without remuneration, seven giving special clinics to the Fifth Year students and Dr. Ante his regular course of lectures in Crown and Bridge Prosthesis to the various years. The others serving were as follows: Drs. O. S. Clappison, J. N. Stewart, A. S. Thomson, C. E. Pearson of Hamilton, and Drs. W. B. Amy, C. E. Sutton and R. M. Box of Toronto.

The Faculty of Dentistry suffered a very great loss in the passing of our much esteemed confrere, Dr. R. G. McLaughlin, who rendered such able service as Professor of Ethics and Dental Jurisprudence for many years.

Dr. Conboy has been appointed to combine the teaching of Applied Psychology, Ethics, Economics and Dental Jurisprudence in a Chair to be known as that of Dental Praxis.

A plan of co-operation has been developed with the Toronto Department of Health to conduct in the Dental Building a school for children's clinic. This clinic will not only afford an opportunity for public service, but will also prove of great value in supplying undergraduates with clinical facilities in children's dentistry.

The Dental Nurses' class this year has been in charge of a Supervisor, and has been made more practical, particularly in the direction of dental laboratory service. The dental nurses-in-training are registered as "occasional" students in the University, the diploma being awarded by the Board of the R.C.D.S. upon recommendation of the Faculty Council.

The annual Dental Practitioners' course this year will be held from September 13th to 18th (the week following the Canadian National Exhibition), and its scope will be somewhat similar to that of other years. The fee for the course for all registrants will be \$25, and members of the profession who desire one week of intensive study of the practical problems of practice, are urged to attend.

During the past session a Conference of Dental Teachers was held from the 1st to 6th March, when eight colleges were represented by twelve teachers in all. The conference was an entire success and it was decided to hold such a gathering annually about the end of the first semester. The 1927 Conference will extend over a two weeks' period.

Extra-Mural Lectures were given in numerous districts throughout the province, the local societies paying the travelling expenses of the teacher, and the Faculty and Board arranging the honoraria. It is hoped that the number of extra-mural lectures during the ensuing year will be greatly increased and will include the outlying districts of the province as well as the counties that have already taken advantage of this service.

Our Library is composed of the Dental Departmental Library of the University and the Harry R. Abbott Memorial Library, and is in charge of the Faculty Librarian. During the session 80 graduates in Dentistry have borrowed books from the Library, in many cases obtaining them by mail.

Members of the profession are urged to make contributions of any interesting specimens of a pathological or other nature, to the museum, and also contributions of dental magazines to the library.

There has been during the year a marked development in the Faculty Consultation Service. Members of the profession are invited to forward models, radiographs, clinical histories, designs for partial dentures, or other information concerning difficult cases in practice upon which they desire advice. Requests are referred to the department or departments concerned and advice given after conference with the clinical department. All such enquiries addressed to the Dean's office will receive careful attention.

Members of the profession are urged to forward suggestions concerning problems met with in practice and meriting special study, experimentation or research. It is hoped that one of the results of the transfer of the School Dentistry to the University will be stimulation in Dental research. The facilities of the University are available to this faculty and it is hoped that they may be utilized to the greatest possible degree.

DR. DAY: I take it that this report is not open for discussion.

DEAN SECCOMBE: Any suggestions from any of the members will be very welcome indeed. It is just a matter of asking the questions and we shall be very glad to answer them. If you have any questions which might be more suitably written and you will forward them they will receive the careful consideration of the Faculty. We welcome suggestions and constructive criticism.

DR. TROTTER: I have much pleasure in moving that this most illuminating and satisfactory report be received and entered on the minutes.

DR. DAY: I second the motion.

Motion Carried.

Dental Diseases and General Health *

E. L. HATTON, D.D.S., CHICAGO.



NO recent contribution has done more to dignify the position of the dentist, or to increase his responsibility, than the theory of focal infection. However grateful he may be for the former, the added burden of this increased responsibility for health conditions remote from the mouth, is not a welcome one. But if the validity of this theory is accepted to any degree at all, he must accept this added burden with all its consequences, or give up the practice of his profession.

One would neither care nor dare to refute this hypothesis of focal infection in toto. To the men and women who are practising the healing art, it offers so promising a resource both in diagnosis and treatment, that to give it up entirely would handicap their therapeutic procedures to a very noteworthy degree. In the second place, so much evidence favourable to its acceptance has been accumulated in the last decade that it is hard to conceive of a person rash enough to deny this hypothesis completely. At least such an individual must be classed with those who refuse to accept the statement that the earth is round and revolves about the sun, or with those who do not believe in the theory of evolution.

According to this theory, germs of bacteria of a low grade of virulence have the property of locating, or colonizing, in certain favourable positions beneath the skin covering of the outside of the body, or within the mucous membrane lining such cavities as those found in the digestive tract, the respiratory system and the genito-urinary apparatus. In such places these bacteria produce lesions that either remain symptomless or cause symptoms of such a vague character that their inflammatory nature is not recognized, lesions whose progress and development are not noticed and which, therefore, exist for long periods of time—months and years—before any measurable damage is done. It is assumed that from these lesions either bacteria or their poisonous products are supplied to the blood stream or the lymph, to be carried even to the most remote parts of the body, where either similar colonies are planted if living bacteria make their way into the blood stream, or damage is done to highly specialized cells if only the poisonous bacterial proteids are discharged into the blood or lymph.

There is a marked difference between these two processes, since the first may be compared with the distribution of seeds from a cottonwood

*Read before Ontario Dental Association Convention, May, 1926.

tree; wherever a seed lodges and develops into a new tree, another centre for the distribution of seeds is established which may, and does, continue to exist long after the original tree has been destroyed. In just the same way a secondary colony of bacteria—that is a secondary focus—may, and no doubt does, exist in many cases long after the original focus has been eliminated. From this secondary focus, which now acts in all respects like the original, bacteria and their poisons may be distributed as freely as from the first, though that has been completely destroyed.

If only the poisons, that is, the toxins, find their way into the body fluids, the secondary lesions are not bacterial foci, and cannot reproduce the original focus, and must become inactive as soon as the primary lesion is eliminated. However, the secondary changes may be of such a permanent character as to handicap the organ or part involved.

There are two paths by which bacteria break through the protective lining of the dental arches in the mouth. This lining has a greater degree of resistance to bacterial penetration than any other part of the body, and even after the bacteria have achieved penetration, the inflammatory reactions which they produce are usually of a very low grade. The first is by bacterial penetration through defects in the crown of the tooth produced by caries, abrasion, erosion or accident. Since it is impossible to close such breaks by any form of epithelial repair, the only resource the body has is found in the connective tissues. Secondary dentine and more or less dense walls of connective tissue, first in the pulp and later at the apex, are thrown across the pathway of the invading bacteria. This noteworthy development at the apex constitutes the so-called granuloma, abscess-sac or apical inflammation, consisting essentially of granulation tissue, containing bacteria more or less constantly, and surrounded by a fibrous tissue envelope which may be complete or only partially developed. The important consideration is that this encapsulation is only partially effective, since as long as bacteria are present in the region, either they or their poisonous products have a possible easy means of access to the circulation.

The second break in the epithelial covering occurs at the junction of the epithelium and the crown of the tooth at the bottom of the gingival trough. The epithelial lining of this trough is thin, and not calloused and tough as is the epithelium of the rest of the mouth lining. With the exposure of the connective tissues here a reaction takes place similar to that found about the apex previously described. It is probably true that bacteria are less likely to find their way from such locations to remote parts, but it is also true that their toxic products find a way very readily into the lymph spaces, and thence into the bloodstream. It seems essential that these poisonous bacterial proteids must

find their way into the circulation by some direct path, in order to cause damage, since in their passage through the alimentary canal these toxic substances are destroyed by digestion.

The literature is full of instances of infections of the first class associated with disease elsewhere in the body, which have been cured by elimination of the inflammation at the apex of the offending tooth. Perhaps because the opportunity for drainage seems so ample in a pyorrhea pocket, there has been great hesitation in emphasizing the existence of a similar relationship of cause and effect between pyorrhea and systemic disease. Yet there are illustrations in such abundance of the improvement or cure of remote body disease following elimination of a pyorrheic condition, that if the relationship of cause and effect is accepted in one case, it must be granted in the other.

On the whole, up to this point there is little difference of opinion. It is generally agreed that infection by bacteria—whether acute or chronic—is a menace to the host, and must be eliminated as speedily as is practical; and, furthermore, that as far as possible the development of primary foci must be prevented, the latter a phase of preventive medicine and dentistry.

It is in the details of the application of this theory to the solution of the problems involved in treating and preventing such infections in the mouth, that the widest divergence of opinion has arisen.

The views of the most radical group in the dental profession may be summed up as follows:

1. That the most frequent location of the primary focus, that is, the beginning of this condition of focal infection, is found in the mouth and particularly around the apexes of teeth.

2. That such low grade infections, including those just mentioned as well as tonsil infections and many others, are the commonest sources, if not the only sources, of the degenerative diseases of the latter decades of life, such as heart and kidney disease, arthritis, and even cancer.

3. That when the apical region about a tooth has been infected, such infections can be cured only by the removal of the offending tooth, because such a tooth, after it has been treated and filled, invariably becomes reinfected a short time after such treatment.

4. That since all pulpless teeth are dead teeth, such teeth, even if the pulp canals and apexes are not infected, should not be treated, but should be extracted.

5. That even in the earlier stages of caries and pyorrhea, the tooth pulp has already begun to degenerate, or has become infected, and that the apex, if not actually infected, is potentially infected, and the health of the remote organs and tissues already threatened.

The validity of such notions deserves a careful analysis.

As to the prevalence of these low grade infections in the mouth, there is little difference of opinion. The data accumulated by Black have been widely quoted, and, as far as I know, have never been questioned. According to him, dental infection, not at all rare in the earlier decades of life, gradually increases until, except in edentulous mouths, only from two to ten out of every one hundred individuals are without radiographic evidences of such infection in the last decades. On this basis alone, since chronic mouth infection occurs more frequently than in any other place in the body, it has been assumed that the mouth is the most common location for the primary focus in focal infection.

As far as I know, no one has ever been able to isolate germs from the blood of individuals suffering from these low grade infections of the type found in the tonsils or about the roots of teeth. Even the blood of animals, injected with billions of bacteria cultured from such low grade infections, rarely supplies a positive culture test. The mechanism of the penetration of bacteria from acute and chronic infections cannot be essentially different, except that bacteria from acute conditions probably enter the blood stream in greater number, and, because of their virulence, persist longer. There should be a rough parallelism between the frequency of the origin of acute and chronic conditions in the various parts of the body. Walton Martin studied the sources of bacteria recovered in the blood in 162 cases. Of these 50 originated in the trunk; 25 in the middle ear and mastoid region; 13 in the head and neck; 11 in the hand and arm; 8 in the legs and feet; 6 in the lips and cheek; and 39 were not traced to their source. From such figures, it is difficult to make a strong case for the outstanding importance of the mouth as a source of focal infection.

It occurred to me that a study of the sources of maxillary sinus infections might supply valuable information as to the relative importance of mouth foci. According to this analysis, not more than thirty per cent. are primary in the mouth.

Not only do such figures tend to discount the relative importance of the mouth as a source of primary foci, but they supply an adequate explanation for the many disappointments encountered by clinicians in treating focal infection by eliminating all traces of mouth infection.

These notions differ markedly from those of individuals who see a great hazard, not only in every infected tooth, but in every pulpless tooth. There are those, indeed, who find every pulpless tooth an infected tooth using bacteriological methods, though such teeth are radiographically negative. Rosenow, for example, states that he has yet to find a pulpless tooth from which he has not isolated streptococci or milar bacteria. But this statement, in many instances, is based upon the appearance of a single colony in his shake cultures. Haden, using

the same methods and reproducing Rosenow's results in most respects, not only finds instances of pulpless teeth that are negative culturally, but feels that he must have at least ten colonies in his culture tubes before he permits himself to be convinced that such teeth are infected. Haden's work is interesting in that he finds teeth with positive radiographs that are negative using bacteriological methods, as well as teeth negative in the radiographs, that harbour bacteria about their apexes, and that have gross evidences of infection.

A very careful study of teeth with apical infections surrounded by intact, thick, fibrous capsules, was made by Loeffler—a German investigator. He found a little less than half harboured bacteria, mostly green-producing streptococci, and came to the conclusion that in this type of apical infection the bacteria tend to be destroyed, and that this not only represents a healing process, but that it is hard to conceive that bacteria may be distributed to remote parts of the body from such lesions. This corresponds to an opinion expressed by Gilmer, and in part with my own observations. I still believe, however, that bacteria, when present, do make their way into remote parts from such lesions.

Apparently, one important consideration has been overlooked in the study of these lesions by bacteriological methods, including inoculation of animals. The reported experiments, as far as I know, largely concern bacteria from individuals who are not only harbouring apical infections, but demonstrable lesions elsewhere in the body; that is, the bacteria come from persons who are sick, persons who have comparatively little resistance to bacterial invasion. A series of experiments made in our laboratory, using bacteria recovered from apical infections in individuals exhibiting no other evidences of disease, has yielded surprisingly few lesions in inoculated rabbits. On the other hand, we have been able to demonstrate a very definite selective localizing tendency in other cases. Mendel produced similar results by inoculating mice with streptococci isolated from apical infections. And it may be just this condition that has prevented the repetition of Rosenow's results in the hands of other workers.

In asthma, Koessler is of the opinion that about sixty per cent. of these phenomena may be traced to non-bacterial intoxication, such as plant pollens, and only forty per cent. are of bacterial origin.

There is, therefore, good reason, while realizing the potential menace of mouth infection, to discount the part played by it in the production of foci elsewhere in the body, or in the production of the degenerative diseases of the latter decades of life.

Our studies made on pulpless teeth harmonize with others, and indicate that pulpless teeth are not dead teeth, and that even teeth with

infected pulps and apexes, under certain conditions, may be treated with a high percentage of successful results.

While it is true that the pulps of teeth are very responsive to both disease of the crown and the peridental membrane, and are likely to develop degenerations secondary to caries and pyorrhea, yet these changes are highly localized and not the potential hazard to health of the individual as has been suggested.

There seems, therefore, some rational ground for the adoption of clinical methods based upon arranging our patients into two general groups; those with mouth infection, but without noteworthy evidences of secondary infection; and those suffering from diseases of a degenerative type with multiple lesions—a condition so characteristic of the victims of disorders of this kind. It would not be at all remarkable if local infection instead of being primarily a local condition, may be a distinct disease entity. This statement is the reverse of the usually accepted opinion, and must be taken merely as a suggestion.

The recent trend of the theories with respect to nephritis are of interest in this connection. Most of us have been taught that nephritis is primarily a disease of the kidneys, and that the rest of the body is involved only in so far as it is impaired by the failure of the kidneys function. This newer theory assumes that nephritis, at least certain types, instead of being a local condition, is a general condition, and that all the cells of the body are involved, and the changes in the kidney cells parallel those of the rest of the body and do not precede them.

On this account I can and do sympathize with the effort of Price to classify mouth infection into groups; one susceptible to secondary infections, another immune, and a third midway between the other two. Unfortunately, his susceptible group contains those who have apical infections that are small and distinctly encapsulated, just the type of lesion that Loeffler, Gilmer and others associate with a healing process and the reduction of the number of bacteria in the lesion, or even the actual extinction of the bacteria, as well as relative freedom from secondary infections. These two sets of observations cannot be reconciled, and it is difficult to believe that the whole company, with the exception of one man, is out of step.

There are two phases of the incidence of mouth infection that are given but comparatively little attention. First, that mouth infection is an index of the individual's reaction to infection, and that mouth infection parallels degenerative conditions elsewhere in the body rather than precedes them; and second, that mouth infection may be, and often is, secondary to chronic in all. The mouth mucous membrane and the mouth tissues have a resistance to infection that is far greater

than any other part of the body. If it were not so, the hazard of the practice of dental surgery would be of a much greater degree than it is.

It is a general truth that in the long run the most promising means of handling any infection consists in raising both individual and racial immunity, and to this end such resources as vaccination, diet, and other preventive measures of the same kind are more to be prized than a rigid adherence to therapeutic procedures based on the elimination of parts of the body which may become the seat of such infections.

Throughout this paper I have stressed the notion that focal infection still has the status of an hypothesis, and in its application both to the individual case and to the whole process of infection that this point of view must be maintained. One can neither promise the individual nor the world that if all traces of mouth infection are eliminated, a noteworthy, substantial, favourable result is bound to follow.

Our promise to the individual should be guarded. There may be a connection between his mouth infection and his broken health. If so, the effect of its removal may be almost miraculous. If not, our efforts will be entirely in vain. Our promise to the world must be equally guarded. We have no right as yet, on the basis of the evidence that has been submitted, to assume that the removal of mouth infection is going to exercise a profound influence upon the incidence of the degenerative diseases of the latter decades of life. We may, and do, hope it is so.

I am most friendly to this hypothesis—but I do believe that I can do the cause the best possible service by stressing its limitations at this time. On the other hand, over-emphasis of its application to dental infection is bound to hamper its progress. It is my hope that the dental profession will adhere to a middle-of-the-road programme, neither relapse to the sloppy procedures of the past decades, nor be carried off its feet by the adoption of a policy of extreme radicalism.

Members of the Senate, University of Toronto



R. R. GORDON McLEAN has been elected a member of the Senate of the University of Toronto, representing the Royal College of Dental Surgeons of Ontario. The Faculty Council is represented by Dean Seccombe, ex-officio, and Drs. A. E. Webster, A. D. A. Mason, C. A. Kennedy and E. W. Paul, who were elected at the last meeting of the Faculty.

Responsibility of the Management for the Effect of Focal Infections (Especially Dental) on the Life, Health and Efficiency of the Employee

A Critical Review of Dr. Weston A. Price's Recent Essay, that appeared in Dental Items of Interest, December, 1925.

BY JOSEPH A. POLLIA, M.D., LOS ANGELES, CALIF.

I FEEL complimented by being asked to review Dr. Weston A. Price's essay on the "Responsibility of the Management for the Effect of Focal Infections (especially Dental) on the Life, Health and Efficiency of the Employee."

It seems to me that the object of this paper is to show that the teeth of the employee deserve a greater degree of consideration than they have received in the past, because they are known to foster certain disease conditions which are detrimental to health. All institutions which depend upon human labour for their existence maintain well-equipped medical departments to promote the best possible state of health in the employees, because experience has proved that, with all other things equal, maximum production depends upon healthy workers.

Dr. Price's research has convinced him that many diseases which incapacitate the human body begin in the teeth and mouth. The proper treatment of these dental diseases would tend to prevent many of them; therefore, well-equipped dental units should be organized to take care of these dental abnormalities, and thus the health of the employee would receive further protection.

There is no doubt that adequate dental units should be included in the equipment of every business enterprise which requires the services of a number of persons. Then those ailments which are caused by disease, or neglect of the teeth, might be prevented and, indirectly, the efficiency of the employees could be maintained at its highest peak for a longer period of time.

I am in hearty accord with Dr. Price in this programme, and wish to compliment him for his altruistic attitude in demonstrating how human beings can be made happier, by showing those whose particular avocation in life is to direct groups of people a way to promote better and longer health for those who have to execute the orders. Dr. Price's enthusiasm and energy are inspiring, his work is voluminous, and his judgment deserves mature consideration, and it is with utmost respect that I wish to present a few of my own experiences and thoughts on

the same subject. It is the hope that he can further enlighten me that makes me happy to have had the opportunity to discuss this important question with him.

EXTRACTION NOT ALWAYS A CURE.

All students of this subject agree with Dr. Price that dental infections affect certain tissues and organs. Furthermore, it has been my experience that dental infections may cause disease processes to develop in any organ or tissue. But, in spite of this observation, I am very cautious about suggesting that the extraction of the teeth will cure the disease, for the following reasons.

1. I do not know when a tooth is infected or sterile. I have seen streptococci grow from inoculations made from normal bone tissue taken from the jaws under strict aseptic conditions. Many investigators have reported sterile cultures resulting after the implantations of pieces of dental granulomas, or so-called chronic abscesses. The contention that the latter cultures were made under aerobic environment, or defective measurement of oxygen tension, does not hold, since all these objections were foreseen and adequate preparations made.

2. Even when a tooth is known to be infected, its relation to the health may be obscure, because it often happens that individuals with infected teeth enjoy perfect health and, moreover, give no demonstrable symptomatic or clinical indication of being abnormal. Furthermore, who can tell whether the tooth in question is the primary source of the pathological state, or merely a secondary point of an infection elsewhere? It must not be forgotten that a pulpless tooth loses the greater part of its blood supply when the pulp is removed, and therefore becomes a place of diminished resistance to bacterial invasion. Naturally it can be attacked by any bacteria which may happen to be circulating in the blood or lymph channels. Evidences of infection of normal pulps are occasionally seen after an attack of septicemia or typhoid. I recently saw a case of generalized calcareous degeneration in the pulp following a severe attack of influenza, which was producing a slow death of the pulps of the involved teeth.

3. I am never quite sure whether the infected teeth are causing the ailment or diseased state, for which the patient seeks a cure. Many times they are not the cause, but merely contribute to the severity or chronicity of the disease. In 1921 I made an analysis of 200 cases of chronic inflammatory diseases which showed one or more pathological teeth in the radiographic examination. The resulting figures showed that only 4 per cent. were cured by the extraction of these teeth, 58 per cent. were temporarily improved to a greater or less degree, while 38 per cent. received no benefit whatever. In every case all

pulpless teeth were removed. These figures show that, in spite of the careful laboratory data covering these conditions, one out of every three patients who have all the suspected teeth removed will derive no benefit from that procedure. It would be of incalculable value to the agnostic to know a way by which he could recognize the diseases that are really caused by dental infections. So far there is only one method of determining this relationship beyond any doubt, and that is to extract the teeth first, and then wait and see whether a cure results.

This brings us to the first of Dr. Price's conclusions, namely, that chronic focal infections, such as dental infections, cause degenerations of the fundamental organs and tissues. As I said before, no one disputes this premise, but I wish to know—

First: to what degree do dental infections affect the body tissues?

Second: how can it be determined that it is the dental infection, and not some other focus, which is responsible for the disease? As far as I know, up to the date of this writing, no one has given any satisfactory method whereby a clinician can answer these questions except that of elimination.

As one reads the essay through it leaves the impression that teeth seem to be the only consideration in the etiology of chronic diseases. I do not believe that it is Dr. Price's intention to convey this thought, but nevertheless his work is very often quoted to corroborate many opinions regarding the relation between systemic diseases and dental infections, some of which are not based upon sound premises.

In spite of all the careful study, the clinical fact still remains that the extraction of all suspected teeth does not always cure, and in about one-third of the cases fails even to give relief. The enthusiasm of the group of conscientious men who believe that extraction is the primary step in all cases of illness can be explained on the ground, either that their follow-up system is not well organized, or that they never see to check up the large volume of these failures. It is not my purpose to condemn extraction of suspected teeth, but to warn against the long sentiment existing among a large group of dentists and physicians that if you remove all the "abscessed and pulpless teeth" the chronic disease will be cured.

MEANING OF RADIOLOUCENT APICAL AREAS.

Dr. Price states that the general concept and basis of the medical and dental professions has been based on the presumption that the extent of the rarefaction or decalcification about a root end, being the result of bacterial activity around the root end, therefore constitutes a measure of the quantity of that infection.

If this remark is a correct statement of the facts as understood by

the majority of dentists and physicians, then it is unfortunate, because such a statement does not agree with the best radiological information. Rarefaction is one of the two conditions existing in bone as the result of inflammation. Therefore, rarefaction is indicative of inflammation and not of infection.

Inflammation is the protective and defensive reaction of living tissue against injury, and there are five agencies which can produce injury: heat and cold, electricity, chemicals, trauma and bacteria. Since infection is inflammation produced by a successful assault upon living tissue by bacteria, therefore infection is only one of five conditions which can produce rarefaction.

To go further: rarefaction is due to absorption of the bone lamella. Inflammation can cause also increased density of bone lamellæ. This is shown in the radiograph by radiopacity, due to an increase in the quantity of calcium salts. Infection, being a form of inflammation, can also induce bone deposition. Therefore radiopacity, which is due to bony hyperplasia as a result of inflammation, is also a radiographic sign of infection. Two sources of error are present when rarefaction alone is taken as the basis for the existence of an infection:

First, that the rarefaction may not be the result of a bacterial inflammation.

Second, that a bony hyperplasia which is produced also by a bacterial inflammation may be overlooked.

The most probable explanation as to why infection should produce bone hyperplasia in one instance and rarefaction in another is that where the injurious influence is present in an attenuated form, or the resistance of the area injured is high, the irritant acts as a stimulant to the surrounding cells and causes an increase of tissue. On the other hand, if the agency is powerful or the resistance is low, then tissue destruction, or rarefaction in this case, results.

I believe it is axiomatic in immunology that a weak toxin in a weak individual will produce a weak reaction, and a strong toxin in a resistant person will also cause a weak reaction. If a toxin is stronger than the resistance, the reaction will increase up to a certain point, until the irritant is so powerful that the reaction is smothered. The injury does not stop because the tissue is weak, as Dr. Price infers, but becomes fulminating and leaves irreparable damage in its wake.

Applying this to Dr. Price's statement that a high defence produces a large chamber in the bone, whereas a low defence produces a much smaller zone of radiolucency, the following inconsistencies appear:

First, that he assumes that the toxic agent is always of a strength sufficient to produce a strong reaction in a person of high defence. This is possible, but not probable, because a strong individual is just

as likely to be attacked with a mild toxin, with a mild reaction following, as with a powerful one.

Second, that a person of so-called "low defence" is always attacked by a strong irritant which never produces a violent or extensive reaction. It has been my clinical observation that wherever a weak individual is the victim of a strong influence, the results are too apparent to leave any room for discussion.

Therefore, while it is possible that individuals of low defence give only slight reactions, this is probably an exception. It is much safer to estimate the degree of injury by the type of reaction, rarefaction being indicative of the severer forms, and hyperplasia of the milder, while the *extent* of the lesions would show either the amount of the irritant or the duration of its influence.

DR. PRICE'S VIEWS ON RADIOGRAPHY DISCUSSED.

Now to take up the radiographic side of Dr. Price's essay. Although it is true that "we cannot photograph a dog behind a bush," this situation is not analogous to that of a "zone of calcification," or, more accurately speaking, an area of hyperplasia does not hide the existence of an inflammation. Instead it acts as an advertisement to its presence, and to call it x-ray negative because it is a hyperplasia instead of a rarefaction is a gross error.

Hyperplasia is just as important a sign of trouble as a large zone of rarefaction. So that it is not to be wondered at that Dr. Price finds evidence of systemic disease in individuals whose pulpless teeth, surrounded by hyperplastic alveolar sockets, have been looked upon as being normal or safe because no rarefaction was present, or because the rarefaction being surrounded by an area of hyperplasia it was judged to be in the process of healing.

Teeth which are infected (pulpless or otherwise) and show normal images in the radiograph are very rare. It is a grievous mistake to leave the impression that the radiograph is unreliable. Many radiographs of diseased teeth are interpreted as normal because the person who gives the opinion is not well grounded in the fundamentals of alveolo-dental radiology. So that quite a few so-called "normal" appearing images are so called because of either poor radiographs or insufficiently informed radiologists. It is a similar situation to the Wassermann reaction. The cases of clinical syphilis which give a negative reaction are very infrequent. Until the reaction was done under improved technical methods and by skilled operators, its reliability varied. The same metamorphosis has been going on in alveolo-dental radiology, and the degree of error is now proportionate to the personal equation of the radiologist. The accusation that the radiographs sub-

mitted, even though admittedly poor, represent the average efforts, is a challenge to the radiodontist and not to dental radiology, because as the techniques of operation and interpretation improve, the radiographic findings will more nearly coincide with the pathological, anatomic and histological changes. Dr. Price admits this, since on page 883 he states that "careful examination showed that he had five pulpless root filled teeth, which did not show extensive absorption. They were what are commonly called x-ray negative."

This brings up another very essential topic very commonly misunderstood, namely, *that the extent of the pathological change in the radiograph is no indicator of the seriousness or severity of the systemic disturbance which may be resulting from it.* In other words, a large area of radiolucence does not necessarily mean a serious systemic reaction; nor does a small amount of absorption exclude the tooth about which it occurs from being the cause of a severe systemic infection. Therefore, when a disease is definitely proved to be of dental origin, then every tooth, pulpless or otherwise, which shows any radiographic evidence, slight or marked, should be considered as a focus without discrimination which is based upon the size of the lesion.

The cases which Dr. Price presents to back his conclusions are a fascinating reading. They seem to show very clearly the relationship of such conditions with the dental infection. However, conspicuous by their absence are the reports of the same diseases which had the diseased teeth removed and failed to derive any benefit. Therefore the conclusions are one-sided. Results which are given such an important place in the discussion of any therapeutic procedure are, as a matter of fact, unreliable, since all the past disappointments in therapy, the success of the cults, and terrible crimes committed in the name of treatment, have been championed by a glittering array of "encouraging" results. Empiricism needs results to substantiate its claims, but scientific efforts should stand on their own logic. As important as results may be, they cannot be taken as final corroborative evidence of a premise in medicine or therapeutics, because there are very few problems in which all the facts are known at the start.

When iritis, arthritis, nephritis, torticollis, neurasthenia and other diseases disappear after the extraction of pulpless or infected teeth, this is a happy result. Unfortunately it does not always turn out this way. The cases of the above-mentioned diseases which do not get well after extraction are the ones which require the study. None of these are mentioned in Dr. Price's essay. No attempt is made to discuss the reasons for the failures. The fact that none of the disappointments are used as a contrast to the successes gives altogether too much importance to dental infection alone as a role in disease etiology.

Confucius said, "to know the future, read the past." The past of medicine is a parade of one feature after another, and not one of them in perspective to the whole. Infected teeth are attractive at present, but reason demands that they be viewed in their proper relation to other factors. Focal infection has been gripping medicine and surgery for nearly ten years until it has become the most important single diagnostic and therapeutic item, thus obscuring the important studies in immunology, endocrines, diet, metabolism, physiology, biochemistry and experimental pathology.

RHEUMATISM AND THE TEETH.

For example, Dr. Price speaks of the rheumatic group of diseases. Just what he means by this term is not clear. This term "rheumatism" is now being used to describe a group of affections of inflammatory character occurring in the joints, muscles, nerves, heart and pericardium in which no bacteria can be found. This peculiarity separates this class of disturbances from the inflammatory diseases in these same organs which are the result of the activity of streptococcus, staphylococcus, gonococcus, pneumococcus and rarely influenza bacillus. Obviously, if Dr. Price is using the word "rheumatism" in this sense, he cannot be referring to the bacterial contributions to these tissues which come from the teeth.

Llewellyn, of London, has demonstrated that all these rheumatic states are the expression of an inherited thyroid deficiency, which modifies the reaction of the body to infection. It is to be noted that it is the inherited subthyroidal state which affects the reaction of the body to infection, and not the infection which reduces the resistance. These rheumatic children show instability of emotions, hypertonicity, neuropathic tendency; are susceptible to colds, are readily fatigued, have night terrors, rheumatism, rheumatic fever, rheumatoid arthritis, long before any of the teeth show evidences of decay. The tonsils cannot be accused, because these conditions persist after they have been removed.

RHEUMATOID ARTHRITIS.

In a study of twelve cases of rheumatoid arthritis conducted this year I found the basal metabolic rate from 21 to 37 per cent. Every one of these cases had had all the pulpless teeth removed, tonsils enucleated, and in two instances the gall bladder was also taken out, with no relief. This is ample proof that the eradication of the commonly recognized foci in the treatment of rheumatoid disease offers very little hope, but all of these cases showed improvement when placed upon high protein feedings and thyroid extract.

There is still another group of arthritides which fail to respond to the

removal of foci of infection. Dr. John V. Barrow, of Los Angeles, has been studying such cases, and finds a definite relation between intestinal protozoa, especially the amoeba histolytica, and this disease. His treatment of the condition with emetin and other measures directed against these parasites is giving results which are fully as spectacular as some of those which follow dental extractions. Many such cases have come to him after teeth and tonsils and other so-called foci had been removed.

To elaborate further on arthritis, which is the shining example of a chronic disease due to dental infections, Dr. Price says that there are two great types, which is true from the pathological tissue analysis, but misleading from the etiological angle. Arthritis in reality is a syndrome of joint disturbance which may have a variety of causes, such as

- (1) Rheumatoid, that is inflammatory without bacteria;
- (2) Infective, due to bacteria;
- (3) Anaphylactic from protein sensitization to foods, bacteria, or chemicals;
- (4) Metabolic, as found in gout;
- (5) Anatomical, seen in the backaches due to sacralized lumbar vertebrae, hip joint and knee conditions developing from flat feet, or the low grade joint symptoms due to stasis from varicose veins;
- (6) Traumatic, caused by excessive use; and
- (7) Protozoal, as described by Dr. John Barrow.

Of this group bacteria play a definite role only in the infective and, possibly, the anaphylactic types. They may be found complicating the anatomical and traumatic forms, but only in a secondary relation.

Infective arthritis is primarily bacterial in origin, and removal of the foci does cure the disease. Obviously, only a few of the anaphylactic, anatomical and traumatic types will respond favourably to this treatment, because the symptoms may be due to any bacteria which may be in the vicinity, and not because of any localizing properties. The rheumatic form is helped by salicylates, which are of no value in the gouty type, since it requires agencies which will create a favourable tendency to the proper elimination of uric acid, such as diet, alkalization and the drugs of the cinchophen group; the anatomical needs readjustment to normal lines, etc.

This brief discussion on arthritis demonstrates that the problem of chronic disease is not simple. It seems that disease is a state of the animal body, and not just one condition. Disease undoubtedly requires several conditions in order to produce its manifestations, therefore the removal of only one is merely a temporary lifting up of the overload, which is sure to accumulate again later.

SOURCES OF INFECTION.

The fact that a rabbit develops paralysis after an intravenous injection of a culture from a tooth is interpreted to signify that the bacteria which produced the condition originated in the tooth. It is likely that they did not. When a pulp is removed from a tooth it is deprived of the largest part of its circulation, since inflammatory activity depends for its irritation on the bloodstream; consequently it presents an area of diminished resistance. It is quite easy for this pulpless tooth to become infected by bacteria which originate in some other area or focus.

It is also quite possible that other primary foci are the real incubators, and therefore the removal of the teeth would not result in the cure.

Teeth and tonsils are mentioned as important places for bacterial propagation, and, by reason of the ease with which they can be removed, constitute the first step in the process of elimination. However, it must not be forgotten that there are other portions of the body with much greater possibilities for systemic involvements by virtue of profuse blood supply and extent of surface exposure. In analyzing a disease of chronic inflammatory nature the following foci must be considered:

- (1) Nose;
- (2) Antra, frontal, ethmoidal, and sphenoidal sinuses;
- (3) Nasopharynx and adenoids;
- (4) Tonsils;
- (5) Middle ear infections;
- (6) Alveolar processes and gingivæ;
- (7) Salivary glands, usually the submaxillary;
- (8) Lymphatic glands of the neck, trachea and bronchi and mesentery;
- (10) Gall-bladder;
- (11) Appendix;
- (12) Colon, sigmoid, rectum, hemorrhoids;
- (13) Genito urinary tract, kidneys, ureter and bladder, vagina, uterus, tubes in the female; urethra, prostate and seminal vesicles in the male;
- (14) Skin with pustular acne, ingrowing toe nails, boils and carbuncles and scalp infections.

It would take a searching physical examination to rule out all of these areas. Many times this is not done, but immediately the teeth are condemned and ordered out. A case was referred to me recently with hypertension, which had been laid to a single remaining tooth in the lower jaw, which showed in the radiograph a slight amount of alveolar

crest absorption and a thickened pericementum. The examination of the patient showed:—

- (1) Pustular acne;
- (2) Excess use of tobacco;
- (3) Perforated nasal septum, nasal polyp, and catarrhal inflammation of the naso-pharynx;
- (4) Tonsils enlarged and crypts filled with fluid purulent secretion;
- (5) Moderate arteriosclerosis;
- (6) Overweight 20 lbs.
- (7) Enlarged and fibrous prostate;
- (8) Infected hemorrhoids;
- (9) Chronic glomerulo-nephritis.

Perhaps his tooth should be extracted, but it could be prophesied with safety that it would not improve the high blood pressure.

A dentist consulted me for exhaustion, malaise, inability to work, and progressive weakness. He had had all his pulpless teeth extracted except one, and that was a lower second or third molar which he could not afford to lose because he would not be able to chew. He had an infected gall bladder with ten stones.

A physician saw me because of neurasthenia, tachycardia, razor edge emotions, weakness and loss of weight. He had every one of his teeth removed, and became worse. A badly diseased pair of tonsils, intestinal stasis and a prostate with 10 per cent. pus had been overlooked.

These illustrations should stimulate more careful physical examinations, because many diseases, even though they are of chronic inflammatory character, have no relation to infected teeth.

ROSENOW'S EXPERIMENTS.

Rosenow says that 14 strains of streptococci taken from an appendix produced appendicitis in 68 per cent. of the rabbits injected, but appendicitis was also produced in 5 per cent. with strains isolated from other sources. Eighteen strains taken from peptic ulcers with hemorrhage, developed similar conditions in 74 per cent. of animals injected, but ulcer and hemorrhage were produced from cultures taken from other infected points in 29 per cent. Twelve strains from gall bladder infections produced cholecystitis in 80 per cent. of the animals, but this lesion was also produced in 11 per cent. with strains taken from other organs. Space does not permit more quotations.

This shows that although a streptococcus seems to have a predilection for certain tissues, still its selectivity is more or less impure, which shows that it is not only probable, but possible, for an arthritis, iritis or nephritis producing streptococcus, to originate in the gall-bladder, appendix, or tonsil, and then infect a pulpless tooth, and in this way

pagate other streptococci which will retain the tissue affinity of the parents, and when the tooth is extracted and cultured and inoculations to animals are made from the bacterial growth, they will show lesions of the joints, iris or kidneys.

Furthermore, when a culture made from the extracted teeth of a patient suffering from gastric ulcer is injected into a series of laboratory animals, gastric ulcer is not the only lesion which is produced. Other active processes are found in the eyes, heart and vessels, muscles and nerves and nervous system. In other words, the affinity is not really specific. The autopsy picture of these animals resembles a streptococcic bacteremia and not a localization, because the latter would imply the involvement of only the specific similar tissues in both the patient and experimental animals.

DR. PRICE'S CONTENTIONS DISCUSSED.

Dr. Price's classification of disease processes in the essay is not rigid, and therefore permits many interpretations to be inferred. In the quotation on subacute endocarditis no mention is made of the rheumatic form, for which, as has been said before, no bacteria have been demonstrated. Dr. Libman's work, in which he quoted that the streptococcus viridans was the organism in 95 per cent. of the cases, refers only to subacute streptococcic endocarditis, and not to the rheumatic, gonorrheal or staphylococcic forms which also may have subacute forms. It is further stated that a group of children having chorea (Saint Vitus dance) were cured when taken to the seashore, but that 60 per cent. developed heart involvements, which they did not have at the seashore, when returned to home environment. I do not believe that environment had anything to do with it, since heart disease, or, more correctly speaking, endocarditis, is a complication of chorea in from 60 to 73 per cent. of all cases.

Dr. Price's experiments on the relation between dental infections and the calcium content in the blood interest me very much. It is a decidedly original presentation of this important subject. Calcium deficiency has been a knotty problem for a great many years, especially in the growth and development of children, and if the observations which he has made can be applied to cultures taken from the tonsils and adenoids of the young, malnourished children, Dr. Price will have done the world and humanity a great service. I sincerely hope that he continues the work on calcium deficiency, and will look forward with great interest to subsequent reports.

Dr. Price is right in line with the best and most advanced medical thought of the century when he points out that prevention of heart, kidney, lung, arterial, metabolic and chronic diseases is the only way

that the span of human life can be lengthened, and therefore is to be congratulated for his contribution toward this cause.

Careful study of medical results as applied to treatment reveals how weak the members of the healing art are when it comes to curing disease, especially the chronic forms, and there should be more stress along the line of prevention and fundamental causes, such as the work that Dr. Price is doing. At present by the time a person reaches mental prime he begins to be in physical decline. To my way of thinking this is a great loss, because, just when the brain is of great value its years of usefulness are decreased by organic disease that may be affecting some vital organs. Then we find the person who attempts to turn back the hand of time to 30, instead of starting at 30, slow it up so that at 50 he can feel as fit as at 40, and in the process of rejuvenation he strains his none too strong heart muscle, and is worn off than if no effort had been made.

SUMMARY.

(1) Dr. Price is to be congratulated for having the foresight to recommend to employers measures to ensure the dental health of an employee, because of the importance of the teeth in the maintenance of the health.

(2) Although he presents sufficient evidence to carry this point, I believe that his reports tend to over-emphasize the role played by diseased teeth in systemic disturbances.

(3) An analysis of 200 cases made in 1921 showed that in 4 per cent. the conditions were eradicated by the removal of the teeth.

(4) Dr. Price's radiographic conclusions are not substantiated by the best radiographic information, because rarefaction is caused by agencies other than infection, and hyperplasia is also one of the results of infection. Furthermore, the size of the tissue variation in the radiograph has no relation to its disease producing possibilities.

(5) Infected teeth which are pulpless or otherwise, which show normal findings in the x-ray picture, are very rare. Therefore it is a good policy to leave the impression that this diagnostic means is not reliable, because it may be the fault of the radiologist, and it is not in many instances.

(6) The results of animal experimentation form only one item in the study of this subject, because the bedside results do not warrant such optimism.

(7) It is possible for pulpless teeth to be infected by other foci.

(8) The localization of the streptococci is not specific because similar lesions are observed with cultures taken from other sources, and the specific tissue is not the only one involved.

(9) Dr. Price's use of certain terms such as rheumatism, arthritis or rheumatic groups is confusing.

(10) In the search for foci a thorough investigation should be instituted, because the teeth are only 1 out of 14 other possible foci. Besides, the physician should not stop at the mouth when infection is located at that point.

I hope I have not lulled the reader to sleep with this long review, as I read it over I wonder if it will do any good. I have noticed that the human being is a peculiar animal, in that once he has made his mind on a topic it is difficult to change his opinion. So I think that, after reading this through, those who believe that the extraction of teeth will cure chronic diseases in the great majority of cases will continue to believe so; and those who doubt the efficacy of this measure will continue to doubt it, while the man who is not sure will still be uncertain.

Department of Health, Ontario, Annual Report, Branch of Dental Services

FRED. J. CONBOY, D.D.S.
Director of Dental Services.

N presenting my first annual report, I desire to place on record my sincere appreciation of the assistance and co-operation which I have received from all those associated with me in the Department of Health. As a result of this friendly and helpful relationship, we have been able to accomplish a work far beyond our expectations and we will start upon our second year under conditions which are in every way most promising.

The achievements of the year would, however, have been impossible without the sympathetic and active support which the department received from the dentists of Ontario. As individuals and as an association, the members of the profession have done everything in their power to make the work of the Director of Dental Services as easy and as successful as possible.

The individual dentists have freely given their time to conduct surveys, to give dental health lectures and, in a general way, to promote various activities of the programme presented by the department. The time involved in the performance of these tasks is deserving of notice as many dentists were away from their offices for a number of days, as the inspection not only included the children in the cities and towns, but also the boys and girls who attended the small rural schools.

The contribution made is the more noteworthy when we consider that these men provided their own transportation and cheerfully met out of incidental expenses connected with the inspection.

The Ontario Dental Association through its Oral Hygiene Committee has supplied much material which has been used in connection with the Dental Health Educational campaign. Moving picture films, booklets, slides, newspaper articles and a lantern have been placed at the disposal of the department and these have been sent to all parts of the Province. The association, through its local committees, has arranged many public meetings and has provided speakers so that the importance of Dental Health might be brought to the attention of various service clubs and the support of these organizations might be secured.

The first activity undertaken by the Dental Branch of the Department of Health was to arrange for a Province-wide dental survey so that the municipal authorities might have an accurate idea of the number of children suffering from mouth defects and the cost of providing treatment for those who could not receive dental attention in the regular way. This initial inspection is still being carried on and nearly a hundred thousand children have been examined. In places where there is no permanent school dental service, the local men give their services gratuitously to make this examination and in many places all the dental offices closed their offices for three or four days in order to conduct the survey. Notification cards, provided by the Department of Health and upon which the examining dentist marked the defects which were present in the child's mouth, were sent to the parents and an earnest effort made to see that proper dental attention was given. In many municipalities where the number of children whose parents could not afford to pay ordinary fees, was not sufficiently large to warrant the establishment of a school clinic, a special arrangement was made with the local dentists and in that way the much needed attention was given. The survey revealed some very startling information. Of many thousands of children examined the statistics showed: that 92% of all the children had dental defects in either their first or second teeth and that these cavities numbered on an average over five per child. Fifty per cent. of those examined had unclean mouths and five out of every hundred showed such a septic condition as to be extremely detrimental to health. Less than fifteen per cent. had received any dental attention outside of extraction and ten per cent. had irregular or crooked teeth.

Similar investigations made by the Department among the workmen in industries and the patients in hospitals disclosed the fact that while decay was not as rampant among the adults as in the case of the children.

ren, the number of cases of so called pyorrhea was enormous and the mouth conditions from the standpoint of infection were alarming.

It is now generally recognized that Dentistry is a health essential and when the people cannot afford to pay the regular fees some special arrangement must be made so that they may be able to receive dental attention. These organizations take the form of school dental services, hospital dental departments, industrial clinics and travelling dentists for the unorganized parts of the Province.

Satisfactory progress has been made in the establishment of school dental services. The clinics are of various kinds to suit local conditions. In the large centres a school equipment is purchased and a dental officer engaged to spend full or part time in making a dental examination of all the children and giving dental treatment to those whose parents cannot provide it. In smaller places the school or health authorities enter into an arrangement with the local dentist or dentists whereby the children are sent to his office at stated times, he providing the necessary material and being paid a set amount per operation or so much per hour. In many small communities, the dentists are providing treatment for the poor without remuneration or reward of any kind. In connection with the school work an earnest effort is being made to impress upon the dentists, teachers and nurses the importance of protecting the deciduous or first teeth and the clinics are kept open on Saturday mornings in order that mothers may bring the young children for examination, advice and treatment.

The Hospital Dental Departments are filling a great need in connection with the treatment of the sick. It is conceded by all outstanding physicians that it is impossible to make much progress in the treatment of some patients unless the mouth conditions are improved and the active co-operation between medical men and dentists in connection with hospital services is of distinct advantage to the patients. Most of the hospitals in the large cities now have indoor departments and the work is extending to the hospitals in the towns. In addition to the indoor work, some hospitals are conducting outdoor clinics and treating many people who could not get dental attention in any other way. The Western Hospital, Toronto, conducts a three-chair clinic and there are 29 members on the staff. The dentists not only relieve suffering and remove infection, but fillings are inserted and dentures constructed in order that masticating efficiency may be restored.

Very little progress has been made as yet in connection with the industrial clinics, although many concerns have been visited and the benefits of a dental service presented to the executive heads of the firms. The industrial depression has made it impossible for manufacturers and others to attempt any work which might entail additional expense, but

the educational efforts will certainly bring beneficial results as soon as financial conditions improve. Most employers realize the necessity of keeping the worker in good physical condition and are convinced that dental infection to a very large extent decreases efficiency. Although only two such clinics were established during the past year, we have every reason to believe that within the next twelve months this number will be greatly augmented and the factory dental service will be a part of every well equipped and properly organized industrial plant.

Very happy results have been obtained in connection with the effort to supply a dental service in all parts of the Province. It was recognized that many people had to travel long distances in order to reach a centre where there was a resident dentist. The result was that the people could not afford to spend the necessary time and money and the teeth were neglected. The department set itself to the task of providing itinerant dentists and travelling clinics so that a dentist could visit a small community, stay there until the work was completed and then travel on to a new district. The arrangement has been entirely successful, the people have been well pleased with the services rendered, and the dentists have received sufficient remuneration to make the effort well worth while. The itinerant dentist promises to be a satisfactory and permanent health agent in this province.

The providing of a much needed dental service for school children, patients in hospitals, industrial workers and the people in the sparsely settled parts of the Province is quite essential, but the most important work of the department has to do with Dental Health Education. Mouth diseases must be prevented and in order to accomplish this most laudable purpose the protective programme must be brought to the attention of the people. The people must not only be informed that it is dangerous to the physical well-being to allow dental infection to remain in the mouth, but they must also be frequently reminded. They must also be taught how to prevent dental diseases and encouraged to follow out the preventive programme worked out by the Department. To accomplish this purpose hundreds of lectures on Oral Hygiene have been given and articles on Dental Health have been placed in the leading papers. Very gratifying support in this connection has been received from the Women's Institutes, Home and School clubs, service clubs and many welfare organizations. This encouragement has induced the Department to arrange for a Dental Health Day to be held on October the 20th, 1926, when instruction on Oral Hygiene and preventive dentistry will be given in every part of the Province. Physicians, educationists, dentists, nurses and many welfare and service organizations have promised to co-operate and the success of the undertaking is already assured.

Programme Canadian Dental Association Convention, Halifax, N.S.

AUGUST 16, 17, 18 AND 19TH, 1926.

(Hours given are Daylight Saving Time.)

Monday, August 16th.—

- 9-11. Registration, Gymnasium Building, Dalhousie University.
11.30 Opening of Convention and Invocation.
Addresses by Lieut-Governor J. C. Tory; Premier E. N. Rhodes, Dr. A. S. Mackenzie, President Dalhousie University; Dr. W. C. Oxner, President N.S. Dental Association.
Reply to address of Welcome—Dr. A. W. Thornton, Dean McGill Dental Department, Montreal.
1. p.m. Hodge Podge, Studley, University Grounds. Musical Programme.
2.30. Address, Dr. G. K. Thomson, President Canadian Dental Association.
Report of the President, Dominion Dental Council.
Report of the C.D.A. Committees.
Other business.
4 p.m. Exhibits—Gymnasium Building.
8 p.m. Entertainment—Waegwoltic Club.

Tuesday, August 17th.—

- 9-11. Dr. I. H. Ante, Toronto—Lecture Clinic, Crown and Bridge and Inlay work.
Dr. W. E. Cummer, Toronto—Lecture Clinic, Partial Dentures.
Dr. W. G. Bridge, Boston—Porcelain as Applied to Modern Dentistry.
Dr. W. H. Hoyt, Boston—Clinic, Full Dentures.
11- 1. Dr. Biley Smith, Philadelphia. Clinics on the Wadsworth Articulator.
Dr. W. B. Amy, Toronto—Clinics on Infiltration and Conduction Anaesthesia.
Dr. Woodworth, Chicago—One Piece Casting Technique Fixed Bridgework.
Dr. Akers, Chicago—One Piece Casting Technique Removable Bridgework.
Dr. A. E. Webster, Toronto—Table Clinic, Drug Combinations for Dental Tissue Therapy.

- 2.30. Paper, Dr. I. H. Ante—"Fundamental Principles of Bridge Prosthesis."
 Dr. E. Alan Lieban, New York—"The Importance of Diagnosis in Relation to the Successful Treatment of Pulpless Teeth."
- 3.15. Dr. H. A. Osgood, Boston—"Principles of X-Ray Diagnosis."
 Dr. J. Lowe Young, New York—"Some Ethical Phases of Practice."
 Dr. F. C. Husband, Toronto—"Copper Amalgam Technique for Root Canals." Read by Dr. W. H. H. Beckwith.
- 4 p.m. Paper, Dr. H. J. Baker, Boston—"Amalgam Technique."
 Dr. F. J. Conboy, Toronto—"Dental Services and National Advancement."
- 4.30 p.m. Excursion—Halifax Harbour.
- 8.30 p.m. Informal Dance and Cards—Royal Nova Scotia Yacht Squadron.

Wednesday, August 18th.—

- 9-11. Dr. I. H. Ante, Repeat Tuesday Morning Clinic.
 Dr. W. E. Cummer, Repeat Tuesday Morning Clinic.
 Dr. W. G. Bridge, Repeat Tuesday Morning Clinic.
 Dr. W. H. Hoyt, Continuation of Full Denture Clinic.
- 11-1. Dr. Biley Smith, Repeat Tuesday Morning Clinic.
 Dr. Woodworth, Repeat Tuesday Morning Clinic.
 Dr. Akers, Repeat Tuesday Morning Clinic.
 Dr. A. E. Webster, Repeat Tuesday Morning Clinic.
 Dr. H. A. Osgood, Blackboard and Demonstration Clinic, X-Ray Diagnosis and Technique.
 Dr. H. J. Baker and Dr. MacLeod, Table Clinic, Amalgam Technique.
- 2.30. Dr. T. P. Hyatt, New York—"An Operative Procedure for Preventive Dentistry."
 Discussion opened by
 Dr. D. P. Mowry, Montreal—"Pyorrhœa and the General Practitioner."
- 3.15. Dr. W. B. Tracy, New York—"A Consideration of Gold Inlays as a means of Restoring Lost Tooth Structure."
 Discussion opened by
 Dr. T. P. Hinman, Atlanta—"The Present Status of the Pulpless Tooth or Present Day Practices."
 Discussion opened by

8 p.m. Band Concert and Public Health addresses in the Halifax Public Gardens.

Thursday, August 19th.—

- 9-11. Dr. I. H. Ante, Repeat Tuesday Morning Clinic.
 Dr. W. E. Cummer, Repeat Tuesday Morning Clinic.
 Dr. W. G. Bridge, Repeat Tuesday Morning Clinic.
 Dr. W. H. Hoyt, Continuation of Full Denture Clinic.
- 11-1. Dr. W. B. Amy, Repeat Tuesday Morning Clinic.
 Dr. Woodworth, Repeat Tuesday Morning Clinic.
 Dr. Akers, Repeat Tuesday Morning Clinic.
 Dr. A. E. Webster, Repeat Tuesday Morning Clinic.
 Dr. H. J. Baker and Dr. MacLeod, Table Clinic, Amalgam Technique.
- Dr. D. P. Mowry, Prophylactic Clinic.
- 2 Paper—Dr. Harry S. Thomson.
- 2.30. Golf Tournament at Ashburn Golf Club.
 Other entertainment will be arranged for those who do not play golf.
- 7 p.m. Dinner, Ashburn Golf Club, for those playing in the Tournament and any others attending the Convention who wish to attend.
- Organization of Canadian Dental Golf Association.
 Special entertainment for the ladies in addition to that featured above is being arranged.

Canadian Dental Association



THE response to the questionnaires in the last issue of ORAL HEALTH has been disappointing. Help us to perfect our plans by letting us know that you are coming; think what it would mean to any convention committee to know just how many were coming! Plans could then be worked out with mathematical accuracy and the whole running of the meeting could not help but be made better.

Did you ever stop to think that the success of any convention depends on you? Anyone might feel that it did not make any difference whether he went to a convention or not, but it does; it makes all the difference between a real convention and the other kind. A convention is a success when each one of you decides that "I cannot miss that; all the chaps I know will be there, besides it is time for a holiday and a brush up." Have you ever criticized conventions because you did not like the programme or for some other reason? Then did you stop to think why

it was not a success and what you did to help it? The first essential of any convention is that it be attended; can you imagine a more hopeless convention than one which no one went to? The next essential is that more men attend. When a lot of men in any locality get the convention habit, meetings will be bigger, the executive will have more money to get better clinicians, more firms will exhibit; then just because the convention is bigger and better more men will come, and so the ball grows. Therefore, in the last analysis, any convention depends for its success on whether *you* come or not. Make up your mind now that you are going to get the convention habit, and you cannot do better than start with your national organization.

A feature of the programme which unfortunately was omitted last month was a paper on "Copper Amalgam as a Root Canal Filling," prepared by Dr. Husband, and which will be read by Dr. Beckwith if Dr. Husband is unable to attend.

The exhibit space is steadily filling up and it is expected that the available space, which is very large, will all be used.

34 Larch St., Halifax.

J. STANLEY BAGNALL,
Secretary.

See Canada First

C. A. KENNEDY, D.D.S.



THE convention of the Canadian Dental Association is to be held this year in Halifax, N.S., August 16th to 19th. Those wishing to motor to Halifax were given a going route in the May issue, and the following will be largely a description of the several routes by which the motorist may return.

On leaving St. John, N.B., on the going trip, the motorist may travel across the Bay of Fundy by steamer to the town of Digby, some five-hour trip. The scenic drives around Digby are the wonder of the tourist, especially those that are near the ocean, and in historical interest surpass any other district in Nova Scotia. Leaving Digby, the shore road winds its way along the beautiful Basin running around the base of a mountain, crossing beautiful streams, ascending the very top of the range, winding down again through the hackmatacks and pines to the water's-edge.

Passing through the towns of Annapolis Royal, Kentville and Grand Pre, one may visit the original church where the French inhabitants were held prisoners before deportation, as depicted in the poem, "Evangeline"; then across the Province through winding trails and good roads to Halifax.

On returning, one of many routes may be chosen. One may return



Fishing Near Newcastle, N.B.

the same as on going journey, Route No. 1, given in May issue, or by the all-motor route by way of Halifax to Boston.

ROUTE No. 2.

	Miles
Halifax to Moncton	200
Moncton—Calais	178—378
Calais—Ellsworth	174—552
Ellsworth—Banyor—Brunswick	143—695
Brunswick—Portland—Portsmouth—Boston	113—808

ROUTE No. 3.

Those wishing to go by steamer to Boston leave by Route No. 1050 (Blue Book)—Halifax to Yarmouth, 231 miles. Steamer to Boston—Fare: Passenger, \$9.10; motor car minimum \$15.00, then \$1.00 per cwt. for cars over 15 cwt.

ROUTE No. 4.

Anyone wishing to attend the International Dental Congress in Philadelphia the following week may leave by the following route:

	Miles
Boston—Providence—New London	119
New London—New York	130—249
New York—Philadelphia	95—344
Philadelphia—Delaware Water Gap—Scranton—Bingh'pton	196—540
Binghampton—Elmira—Watkins Glen—Buffalo	223—763
Buffalo—Toronto	120—883

ROUTE No. 5.

	Miles
Boston—Worcester	45
Worcester—Pittsfield	108—153
Pittsfield—Albany	35—188
Albany—Buffalo	298—486
Buffalo—Toronto	120—606

ROUTE No 6.

Boston—Portland	127
Portland—Twin Mountain House—St. Johnsbury—Montpelier—Burlington	208—335
Burlington—Port Kent (Ferry).	
Port Kent—Ausable Chasm—Elizabethtown—Lake Placid—Saranac Lake—Malone	99—434
Malone—Ogdensburg	70—504
Ogdensburg—Prescott (Ferry)	
Prescott—Toronto	226—730

International Dental Congress, Philadelphia August, 1926



THE Seventh International Dental Congress, which convenes in Philadelphia, U.S.A., August 23rd to 27th, 1926, will, beside being a world conclave of the profession, be notable for the exposition it will have of dentistry.

The Congress is to be held in the city where the Sesqui-Centennial International Exposition, an exhibition of the world's progress in the arts, sciences, education, society and commerce, is under way. This exposition will be of vast interest to the fifteen or twenty thousand dentists from all over the world who will attend the Congress.

The Dental Congress will also have a large exposition of its own, relating to the science, craft and history of dentistry. This dental exhibition will be held mainly in buildings which are part of the Commercial Museum, where is located the convention hall, in which the Dental Congress will hold its session, or in buildings nearby.

The dental exposition will be divided into five large and important divisions: a dental scientific exhibit; a dental historical exhibit; a dental public health exhibit; a Government exhibit and a commercial exhibit. Each of these exhibits is being gathered from all over the world.

The historical and scientific exhibits will, it is predicted, be the most exhaustive displays illustrative of the advancement of dentistry that have ever been held. There is being gathered together in America and Europe the most comprehensive collection possible.

The Historical and Scientific Exhibits will comprise objects of interest in every department of dentistry and will illustrate the advance of dental science from its incipency.

Military dental surgery will be an important part of the exhibition. It will be the profession's first opportunity to view results of the war experiences of the dentists who served in field and camp. Dental science in Europe will contribute largely to this section of the exhibition. The government of the United States will have large exhibits illustrating dental work in its Army and Navy and in the U.S. Public Health Service.

International Orthodontic Congress, 1926

 THE First International Orthodontic Congress will be held at the Hotel Commodore, New York City, August 16th-20th, inclusive. This will be the first time any specialty of dentistry has ever been able to conduct a meeting of International character. Orthodontia is the oldest specialty in Dentistry. The Congress is a result of an effort by Dr. William C. Fisher, in getting Orthodontic societies of the world, with the exception of one, to cooperate and produce a programme of International character.

There will be about twenty papers by prominent men from all over the world. These papers will deal with the latest advancements of the science of Orthodontics. There will also be educational exhibits much more elaborate than has ever been attempted in any dental specialty. These reports and clinics have been carefully selected to show the advancements that have been made during the last few years. The reports will be so arranged as to permit of their study by those interested.

This meeting, while being of great interest to the Orthodontic profession, is equally important to the general practitioner of dentistry. Any one interested can become a member of the Congress by writing E. Santley Butler, 576 Fifth Avenue, New York. Subscribing membership can be secured for \$10.00 and will entitle the member to all of the privileges of the Congress including a bound volume of the proceedings of the Meeting. Owing to the importance of the subjects to be discussed, we believe every one interested in Orthodontia even to the slightest degree should avail themselves of the membership.

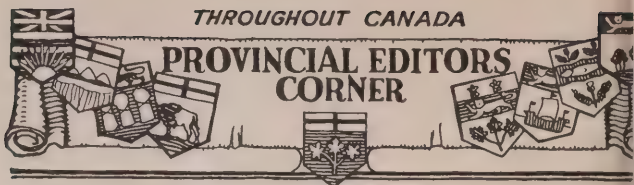
VULCANITE SCRAPERS.—The best vulcanite scrapers I have used are made from old metal saw blades scrap from any garage or engineering firm. Grind the teeth off them and shape on the stone to your liking; they are flexible and keep their edge longer than scrapers made for the purpose.—*The Dental Science Journal of Australia.*

INSTRUMENTS FOR PACKING SILICATES.—Purchased instruments for packing silicates are often either too thick and clumsy, or too fragile. Three simple ones cut from a piece of ivory and cemented into cone socket handles will be found sufficient for all requirements.

(a) A thin, straight one like a long piece of lead sticking out of a pencil.

(b) A small, thin spatula.

(c) Like (a), but having the end ($3/16$ of an inch) at right angles to the shaft.—*British Dental Journal.*



British Columbia—RAY H. WILSON, D.D.S.
736 Granville Street, Vancouver.

Alberta—JOHN W. CLAY, D.D.S.
914 Herald Bldg., Calgary.

Saskatchewan—C. W. PARKER, D.D.S.
Imperial Bank Bldg., Regina.

Manitoba—W. W. WRIGHT, D.D.S.
767 Warsaw Ave., Winnipeg.

Ontario—LIEUT.-COL. W. G. THOMPSON
28 King St. West, Hamilton.

Quebec—ARCHIE N. JENKS, D.D.S.
Medical Arts Bldg., Montreal.
PAUL GEOFFRION, D.D.S.,
308 Sherbrooke St., Montreal.

Maritime Provinces—J. STANLEY BACON
D.D.S., 34 Larch Street, Halifax.

Provincial Editors will appreciate receiving from all local societies copies of past society proceedings or personal notes, for publication.



MARITIME PROVINCES.

THE Halifax Dental Society brought one of their most successful winter programmes to a close on May 18th, with dinner and musical programme under the chairmanship of Dr. Beckwith. The wives were invited this time. Dr. Beckwith was assisted by Mrs. G. R. Hennigar (wife of Dr. G. R. Hennigar) and the String Quintette.

The plan followed by the Society during the past winter has been a series of evenings of a scientific nature, when they were addressed by some member of Dalhousie University staff on a subject closely connected with dentistry, alternating with an evening for group discussion on some dental problem.



A modern broadcasting station with a large range has just been erected in Halifax. It is planned to broadcast at regular intervals talks on all phases of health subjects, among which dental talks will be prominently featured. Dr. S. G. Ritchie, who is an enthusiastic radio "fan," is the chairman of the programme committee.



Dr. G. A. Polley, of Lunenburg, who recently retired from active practice, has the sympathy of the profession in the death of his wife and his own severe illness.



There has been much in the daily press of late about an increased spirit of optimism in the Maritimes; perhaps that is the reason why a large number of the men have been prominently mentioned in the "Marriage" and "Engagement" sections of late!

—J. S. B.

QUEBEC.

SOCIETE DENTAIRE DE MONTREAL.

THE regular monthly meeting of the Societe Dentaire de Montreal was held on May 13th. Dr. Adolphe Larcheveque gave a paper on "The Arrangement of the Teeth in Full Dentures."

Two of the members of the Societe Dentaire de Montreal have been decorated by the French Government: Dr. Nolin, *Officer of Public Instruction*, and Dr. E. Charron, *Officer of Academy*.

The annual meeting of the "Association des Anciens Eleves" was held at the Faculty of Oral Surgery on May 15th.

Clinics on porcelain jacket crowns, gold inlays and overlaps, removable bridge and orthodontia, were given by Drs. T. Cote, H. David, A. Thibaudeau and Paul Geoffrion.

In the evening, dinner was given at the Cercle Universitaire. Dr. Nolin gave an address on the past history of Dentistry in Quebec, in which he recalled the eminent figures of the past generation and made a strong appeal for co-operation and professionalism.

Dr. Dubeau, Dean of the Faculty, the Right Rev. Piette, Rector of the University, Drs. David and Charron, spoke on the same subject.

—P. GEOFFRION, *Secretary*.

* * *

SPRING GOLF MEET—MONTREAL DENTAL CLUB.

THE Spring Tournament was held on the beautiful links of the Royal Montreal Golf Club at Dixie on Monday, May 31, 1926. Some thirty-five members had luncheon and played 18 holes in the afternoon.

F. W. Saunders won the cup for the best gross score, and A. W. Clelland and J. S. Common tied for best nett score.

The arrangements were carried out by Drs. Chas. Morrison, Geo. Muneron and Ross Cleveland.

* * *

THE MOUNT ROYAL DENTAL SOCIETY, MONTREAL.

OFFICERS of the Mount Royal Dental Society, Montreal, have been elected for the ensuing year as follows: President Dr. Bernard L. Hyams; Vice-president, Dr. Lyon Berco- vitch; Secretary, Dr. Lyon P. Strean; Treasurer, Dr. L. J. Pearson; Executive Members without Portfolio: Dr. H. H. Pearson, Dr. S. J. Schacter, Dr. B. Ratner, Dr. S. L. Eidinger, Dr. J. W. Berger, Dr. G. Franklin (Ex-officio).

DENTAL SOCIETY MEETING.



ONTREAL Fall Clinic, under the auspices of the Montreal Dental Club, will be held for the second time on November 1, 2, 3, 1926. Clinic Secretary, A. L. Walsh, General Hospital, Montreal.

—A. N. J.

* * *

ONTARIO.

HAMILTON DENTISTS FORGET THEIR WORRIES.



The Hamilton Dentists on a Festive Occasion—Fifteen Years Ago



THE Annual Picnic of the Hamilton Academy of Dentists was held at Oaklands on Wednesday, 23rd of June, 1926. The time-honored baseball game between the bachelors and the marrieds of the Academy was won by the latter after a keen contest. A programme of sports and golf concluded a most enjoyable occasion. The committee in charge was Drs. Walter G. Thompson (chairman), J. Johnson, Fred. Williamson, Bert Field and Peter Moore.

SOUTHERN ONTARIO OUTING.

DENTISTS and Physicians gathered at the call of Dr. W. M. McGuire, of Simcoe, for dinner and golf at the Norfolk Golf and Country Club, Simcoe, on Tuesday 22nd June, 1926. The outing was an entire success and was attended by representative members of both professions.

Sir Robert Falconer had arranged to attend, but unfortunately was unable to be present. Sir Robert, however, sent the following message:

"Dear Dr. McGuire:—It was with great regret that I had to telegraph you that I would be unable to be with you at the dental outing on Tuesday of next week. I am, therefore, sending you a message for the dental profession who may be present on that occasion:

"The creation of a faculty of dentistry in the University of Toronto last year has meant a great deal for the university, and I am sure will do a great deal for the profession of dentistry, not only in the province, but throughout the Dominion. The faculty is practically the same as it has been in recent years, and it brings high standards of accomplishment in dentistry into the university. The school has an excellent reputation throughout this continent. From now on, however, it is hoped that the development will be greater than was possible under the former control.

"The scientific laboratories of the university will be more and more used for the education of the undergraduate and of the graduate student. The faculty of dentistry undoubtedly will be drawn into closer connection with that of medicine, and it is confidently expected that, through co-operation of these two great professions, the public health of the province and the Dominion will be rapidly and widely extended. The development of preventive medicine is to-day one of the greatest movements in the promotion of human health, and research is winning control over disease."

"The days in which we live are days in which these two professions are rapidly securing mastery over diseases and ailments, and we hope that in the faculty of dentistry of the university there may be many improvements and discoveries which will result not only in adding to its prestige, but in promoting human welfare."

The guests were welcomed by the club president, Mr. Jonathan Porter, and among those who delivered short addresses were: Dean Seccombe, Dr. Fred. J. Conboy, representing the Dental profession, and Dr. J. S. Boyd and S. English on behalf of the Medical fraternity.

* * *

ALBERTA.

IT should be a source of considerable gratification to the Dentists of Manitoba, Saskatchewan, and Alberta, that efforts for the revival of the Western Canada Dental Society have at last borne fruit, and that the Executive met in Edmonton recently to lay plans for a meeting in that city during 1927.

The following is the personnel of the Executive:

Dr. E. M. Doyle, Calgary.

Dr. M. H. Garvin, Winnipeg.

Dr. Manly Bowles, Winnipeg.

Dr. Winthrop, Saskatoon.

Dr. Cameron, Swift Current.

To Dr. Garvin particularly, and the Winnipeg boys, belongs a good deal of the credit for carrying the idea along to its present state. The members of the Executive will do their part as well as the members of the Edmonton Dental Society, who have taken on the responsible and arduous job of being hosts to the reborn society.

If, however, the meeting is not to be a failure and the Western Canada idea is not to be still born, those who are not on the Executive and not residents in Edmonton have got to recognize their responsibility. Without this feeling being general, success will not be attained.

Do Western Canadian dentists want a Western Canada unit in dental organizations?

* * *

The annual election of directors of the Alberta Dental Association, resulted in the return by acclamation of three retiring members of the Board:

Dr. A. E. Hennigar, Calgary District.

Dr. M. L. Moore, Medicine Hat District.

Dr. A. B. Mason, Edmonton District.

—J. W. C.

Medical and Dental Arts Building in Chicago



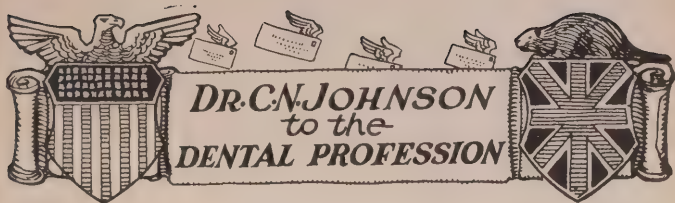
PLANS for the new Medical and Dental Arts Club Building at the southeast corner of Wabash Avenue and Lake Street, Chicago, are now completed, to be erected at a total cost of \$4,500,000.

The Club was organized about two years ago, and is made up of the Chicago Medical and Chicago Dental Societies. It is the intention, in addition to conducting a social and professional Club, to erect a permanent home for all the Medical and Dental Societies in Chicago, and to create a commercial centre in which will be located the leading supply houses.

The building is to be of twenty-three storeys. Stores and salesrooms will occupy the first four floors, with a two-storey auditorium and assembly room on the fifth and sixth floors, along with headquarters offices for the American Dental and other associations.

From the seventh to the fourteenth floors medical and dental supply houses will be accommodated, and from the fourteenth to the twenty-first there will be professional offices.

The upper two floors will be used for club rooms, with lounge, library and dining rooms.



Moving an Office

HAVE you ever moved your office after occupying the same suite for thirty-three years? If you haven't, you don't know what fun is. I mean it. You never knew till that moment how wealthy you were—how many things you had. Articles that had been lost years ago and given up in despair, come to light in the most mysterious way. It is a common propensity in all of us—I was going to say a common failing—to tuck away in corners all sorts of things with the foolish notion that we shall some day need them; and then when we move or clean house we resolutely throw them all out, only to find in a day or two that we did need them. It is the queerest circumstance in all nature that we seldom need a thing till we throw it away.

I have had a unique experience. The building where I had my office was to be converted into a store, and it was imperative that we move out on a certain day. The office I had rented was not ready on that day or even in the same month, and I had to go meanwhile in a single room without partitions or gas or electricity. It was my intention to do merely emergency work and keep my patients comfortable till the new office was ready, but the loyalty of patients was never better demonstrated than on this occasion. They came trooping merrily in as usual and took it all as a huge joke—which it was. They put up with any inconvenience and entered heartily into the spirit of the thing—the only insistence being that I do their work. It was wonderful the way they rose to the occasion, the rich as well as the poor. I sometimes thought the rich adapted themselves to the primitive conditions with a merrier mood than the poor. I have found that the poor are often more exacting than the rich.

So for more than a month I have been housed in a barren room piled high with all sorts of things—furniture, equipment, books—oh, the stacks of books—desks, benches, etc., etc.. It may sound incongruous to say that a room is barren when it has all these things in it, but

there is no place so barren as the one which has a confusion of articles filling it.

I have been treading a foot engine and eliciting roars of laughter from my patients, many of whom had never seen such a primitive thing as a foot engine before—think of it! And it was not so very long ago that the foot engine was the last word in up-to-date equipment. The first tooth I filled in the mouth of a patient was a lower molar. The cavity was prepared with a hand drill—a foot engine was too dangerous an appliance to trust to a student in those days. A ring was worn on the finger carrying a bar which passed down to the palm of the hand and ended in a spoon-shaped receptacle so the reverse end of the drill could rest in it and not injure the hand. (I have that ring in my pocket now, and it couldn't be bought for money.) And yet with that primitive equipment the filling remained in position doing good service till the patient passed away in January, 1925—a period of more than fifty years. Alas, alas, how many of my other fillings have fallen by the wayside during that time. And yet taking it "by and large," the tenure of our filling operations is one of the most encouraging features of our professional experience when we study our records after many years of practice in one locality. Some day I shall write an article on that, but now I must tell about my moving.

Certain of my friends commiserated with me in the fact that I had to give up my old office and move after being in that one environment so long. They said it was a shame, and that I probably would never feel at home anywhere else. Their sympathy was completely wasted. I have seldom had an experience in my professional life which gave me so much pleasure as this. I have had a real thrill in fitting up the new office, in planning an improvement here, a new equipment there, and a greater convenience everywhere. I have found it much like starting all over again and have experienced the same enthusiasm that I did when I opened my first office. It has added zest to my professional activities, and given me a new and more interesting outlook on life. To use a trite expression, it has "renewed my youth" and sent me more blithely on my way. I love to take my old cronies by the arm and say: "Come and see my new office—I'm sure you will like it."

It is said that every experience of life is interesting—some of course more so than others—and I am inclined to list as among the most interesting, exciting and stimulating, that of fitting up a new office after many years of practice. Confusion? Of course. Inconvenience? Why certainly. But it can all be turned into an entertaining frolic if you only see the humorous side of it, and enter into the proper spirit of the occasion. To inject humour in the various enterprises of life is to save the day in many of the trying experiences which confront us,

and no situation in the material aspect of our existence is ever quite so bad that it cannot be relieved by the subtle magic of humour.

I am often asked by men who see me only at dental meetings, and see me at so many, if I am still in practice? This being so essentially a personal communication, I am tempted to say to these men in this connection that if they could follow me for just one week their question would be answered for all time. I am obliged, of course, to be out of my office on certain afternoons to attend to my other duties, but during the time I am at my chair the action is rapid fire from one end of a long day to the other. As to office hours, I have only to quote the remark of my young lady assistant, when some one said to her one day: "What time does the Doctor get to his office in the morning?" "You will have to ask the night-watchman," she said, "the janitor doesn't know."

And now to terminate this unpremeditated and unaccountable burst of personal confidence, I can only remark that the greatest boon I ask is to be permitted to serve these dear patients of mine for many years to come; but whether many or few nothing can ever take out of my life the joy I have experienced in serving them as long as I have. In all the various activities of life there is no relationship more interesting or enjoyable than that of loyal patient and devoted practitioner, and the professional man who has enjoyed this can have little ground for disappointment in his chosen career.

C. H. Johnson

The Cartwright Medal, 1926

 At the quarterly meeting of the Council of the Royal College of Surgeons of England, on April 15th, 1926, Sir John Bland Sutton, President, in the chair, the Cartwright Medal, with an honorarium of £85, was awarded to Dr. James Sim Wallace, L.D.S., for his essay on "Variations in the form of the jaws, with special reference to their ætiology and their relation to the occlusion of the dental arches." The subject for essays for this prize for 1926-30 will be "The Ætiology, Pathology, and Treatment of Periodontitis" (pyorrhœa alveolaris). The next prize will be given in 1931.

ORAL HEALTH heartily congratulates Dr. Wallace on receiving the award covering the past five-year period.

Oral Health

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No.

EDITORIAL

Dentistry's Vital Problem

 O scientific person to-day doubts the fact, the possibility the vital danger of focal infection or that infection about the roots of teeth may reach the blood stream and be carried to other and remote parts of the body. Even the average layman appreciates the importance of clearing up infection, no matter where it may be found in the body. However, so much has been said and written about dental infection and so little about the possibility of its removal by dental treatment, that many thoughtful people are deliberately sacrificing their teeth with the immediate or ultimate necessity of artificial restoration.

When the family physician is *absolutely certain* that pulpless teeth are dead teeth, that dead teeth are infected teeth, that infected teeth cause systemic diseases, and when the family dentist is *not quite sure* about any of these things, patients are not to be blamed for taking n

ances with the treatment of dental disease, especially when extraction may save time, pain, expense and much worry about the possibility of cal infection.

But Nature intended the teeth to remain in the mouth and function in health, and it is the task of the dental profession to assist Nature in the accomplishment of this plan. Prosthetic restorations are at best a poor substitute for the natural teeth and this statement may also be applied to bridge prosthesis. A toothless nation would be less virile and efficient, with lowered resistance and suffering a physical defect that would deleteriously affect the symmetry of the face, mastication, speech and beauty. In the interests of the race, the teeth must be preserved in health.

Prevention of disease is of course the first and most important consideration. When disease occurs about the teeth, a condition of health must be re-established. Should dental treatment fail to accomplish its purpose, dental surgery must be resorted to, to be followed by some form of prosthetic restoration. This is all a matter of routine and perfectly clear to dental practitioners.

But Dentistry's vital problem to-day is to know when a tooth is infected, whether the local and systemic conditions are such that the infection can be reasonably expected to be cleared up by treatment, and having proceeded with treatment, to know when the balance has been shifted from the pathological to the physiological side. In arriving at a conclusion upon these vital questions, the complete clinical history of the patient must be studied and every possible means used to arrive at a correct diagnosis. The x-ray is indispensable, but alone is not sufficient; a complete dental history is essential, including radiillumination and pulp vitality tests. The complete clinical history of the patient is required that the patient's general and local conditions may be understood and the bodily forces of resistance estimated.

Dentistry and the Provincial Departments of Health

IR ARTHUR NEWSHOLME, one of the world's leading contemporary authorities on public health administration, has just returned from a tour of inspection of demonstrations in public health administration in United States and is reported to have said:

"Years are already being added to the life of each member of the community, and every advance in curative and in preventive medicine implies an enhancement in the general standard of life." He continued:

"During the past seventy-five years no less than fifteen years have been added to the average duration of life in several countries. During the past twenty years the gain in length of life has been greater than in the previous fifty years. Already in the registration area of the United States—notwithstanding the vast number of avoidable deaths in childhood and in adult life, caused by diseases well within our control—the average expectation of life for every infant at birth is fifty-eight to fifty-nine years. A large part of this improvement is directly due to the increased care of health now becoming more general, both by personal effort and by the work of health authorities and of voluntary agencies.

As an example of such work, Dr. Newsholme cited the New York health demonstrations, above referred to, in which the Milbank Memorial Fund is spending \$2,000,000 to reduce sickness and death and to demonstrate that present-day medical knowledge has made longer life attainable.

"After the demonstrations are completed, it will almost certainly be found that there has been an accelerated degree of improvement in the general rate of infant mortality per 1,000 births," said Sir Arthur Newsholme. "This ought to be true even more for the rate of mortality among infants in the first month after birth and for the deaths of mothers connected with child bearing. So also with mortality from diarrhoea, and especially from diphtheria."

"In promoting the welfare and health of the mother and her child in the early years, one can most easily anticipate disease, and bring the work of hygiene out of the region of pathology and disease into that of positive attainment and enhancement of health. Satisfactory care of the mother during pregnancy and of the infant, by means within the reach of all (including a regulated diet, fresh air and sunshine, avoidance of exposure to the infectious colds of adults, and other medical preventive measures), will prevent rickets and many serious ills of childhood."

"Maternal and child health are especially indicated in the prevention of two great scourges of humanity, tuberculosis and venereal diseases. No work for the mother and her child can have more than a fractional result, which does not constantly aim at minimizing and eventually eliminating these two arch-enemies of mankind."

"Evil environmental circumstances which cause excessive mortality also cause illness and permanent deterioration of health in a vast number of persons," Dr. Newsholme continued. "In the battle of life, there are always more maimed and wounded than there are killed. There are those who contend that in a prolonged life we do not really live longer, but are merely longer in dying. To them we throw back the burden of proof of their assertion and maintain the

each advance in the civilized pursuit of health means not only a temporary salvation from death, but an enhancement of the general standard of life."

This is a most interesting statement by Sir Arthur, and while the teeth are not specifically mentioned, there is no doubt that the dental profession is playing an important and vital part in the improved health conditions of the people. In a recent address, Dr. W. J. Bell, Deputy Minister of Health for Ontario, referred to the Dental Branch of the Department of Public Health, and said that dentistry had now come to be recognized as a major factor in public health. Recent researches in medicine and particularly in the field of focal infection, had disclosed the fact that septic foci in the mouth had been the cause of an astonishingly large proportion of illness. Dr. Bell strongly emphasized the health protection and disease prevention aspect of dentistry, and cheered the profession by expressing, on behalf of the Minister and Department of Health, a very hearty welcome and a front seat for the profession of dentistry in the public health field.

The close relationships of the teeth to systemic conditions and of systemic conditions to the teeth are well established and recognized by scientific men.

In the Dominion of Canada, however, the dental profession is significantly failing to take its place in the official health organizations of the country. This is not the fault of dentistry. The profession stands ready to co-operate, but assistance cannot be the most effective unless it forms an integral part of the service. Every provincial department of health should have its Director of Dental Services giving full time to this branch. At present, Ontario is the only province that has made such an appointment. Surely the profession in Canada would be justified in organizing itself in the public interest and demand that in each province, at least one appointee of the Department of Health be a Dental Officer.

If members of the profession will forward information concerning the number of physicians, dentists, and nurses, employed in the several Provincial Departments of Health, ORAL HEALTH will be glad to publish the facts, and this doubtless would result in the plans of provincial public health organizations being so arranged that, in the public interest, co-operation between the Departments of Health and the Dental Profession be secured, that Dentistry may have the opportunity of playing its part.

Elsewhere in this issue is published the report of Dr. F. J. Conboy, Director of Dental Services, Department of Health, Ontario, which outlines in detail some of the work accomplished in the Dental Department during the past year.

Correspondence

April 14, 1926.

Dr. Wallace Seccombe, Editor, Oral Health, Toronto, Canada.

My dear Doctor,—The matter of reciprocity is an absorbing question the minds of many in the Dental Profession, and has been for a number of years. Iowa at one time had reciprocal arrangements with some twelve fourteen States. Several States have, in the last few years, cancelled the reciprocal arrangements, and others which provide for reciprocal arrangements, leave it optional with the Dental Board of their State, with the result that no reciprocal arrangements are made. In such cases the Dental Board is at fault.

I am of the opinion that reciprocity along the lines of our Iowa law would meet all requirements.

We can arrange for reciprocity with any State, the laws and standards of Professional attainment of which, are the equal of those in Iowa.

How do our reciprocal arrangements work out?

A Dentist in Iowa wants to move to Missouri.

First, he writes to the Dental Board of Iowa for an exchange certificate to Missouri.

To be entitled to this, he must have practised in Iowa for five years, be a member of the State Society, and have in his possession a diploma from a recognized Dental School.

Qualifying in these matters, and the paying of a five dollar fee, he is given an exchange certificate to Missouri.

He now writes the Missouri Dental Board, presenting his exchange certificate.

This is accepted, and he is relieved of any theoretical test, being required to take the practical examination, only.

You will note that this arrangement includes some of the ideas set forth in your paper, "Reciprocity in Dental Licenses."

There are several reasons for requiring the practical test, and in the last analysis shows no objectionable features.

Yours very truly,

(Signed) C. B. MILLER,

Secretary.

(Dental Division of Examinations and License
State Department of Health, Iowa.)

Medicine Hat, Alberta, 14th June, 1926.

Editor of Oral Health, Toronto.

Dear Sir:

At a meeting of the Medicine Hat Dental Society held on 3rd June, 1926, the enclosed resolution, or rather amendment, was adopted.

This letter is sent as per instructions contained in above motion and amendment and our society will be pleased if you could find space in your magazine for publication of original motion and amendment.

Yours truly,

A. H. McNICHOL, Secretary.

Moved by Dr. Allison Smith, seconded by Dr. McKee:

That the members of the Medicine Hat Dental Society in order to uphold the dignity of the dental profession, go on record as follows:—

That all dental signs be of the following maximum size, viz., eighteen inches long by seven inches wide and contain the name of the practitioner and the word "dentist" only, and that each dentist be limited to one sign the sign preferably to be of brass with black letters, and

That copies of this resolution be sent to the Secretary of the Provincial Dental Board of Alberta, Oral Health, the Dominion Dental Journal and the Dental Items of Interest.

Moved by Dr. Moore, seconded by Dr. MacDonald, that the above resolutions be amended to read:—

That all signs whether of brass or window lettering contain only the name of the dentist and the word "dentist" or letters equivalent, and be of a size considered well within the code of ethics of the profession and that any other form of advertising be considered unethical, and

That copies of the amendment be sent to the secretary of the Provincial Board of Alberta, Oral Health, the Dominion Dental Journal and Dental Items of Interest. Carried.

“Though we travel the world over
to find the beautiful, we must carry it
with us, or we find it not.”

—*Emerson.*



THOMAS B. JONES, TORONTO.

*Caretaker and Engineer of the School of Dentistry of the
Royal College of Dental Surgeons of Ontario
for over thirty years.*

ORAL HEALTH

*A JOURNAL THAT STANDS FOR THE OUNCE OF
PREVENTION AS WELL AS THE POUND OF CURE*



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Orthodontia as a Practice for the Family Dentist*

ABRAM HOFFMAN, D.D.S., F.A.C.D., BUFFALO, N.Y.

LLOW me to express my appreciation and pleasure for the invitation to present to this body a paper upon a subject which almost constitutes a "hobby" with me, and I trust that my enthusiasm in the subject will not lead me so far astray as to weary you. I have learned that it is sometimes well to have a convenient stopping point along the way and accordingly have divided my presentation into two parts; the first a paper, the title of which is "Orthodontia as a Practice for the Family Dentist," varying a trifle from the title as announced upon the programme,—the second part is an informal lantern talk dealing with "Treatment and Simple Appliances." Therefore, you see I have considered my listeners as well as safeguarding myself.

In the January, 1926, number of the Journal of the American Dental Association there was printed an editorial which in no uncertain terms pays a great tribute to dentistry. It perhaps pays a still greater tribute to that branch of dental science known as Orthodontia, because it refers directly to that particular field in dental science. The editorial was penned by a distinguished son of Ontario, and we of the United States, the country of his adoption, join with you in love and admiration of the man, Charles Nelson Johnson.

The wisdom and soundness of Dr. Johnson's judgment has been evidenced upon many occasions in the affairs of the dental world, and the closing sentences of the wonderful tribute referred to offers something for us to think about:

*Read before the Ontario Dental Association Meeting, 1926.

"In the glowing east, we see the many-tinted bow beckoning in the dawning of a better day, when all the children of all the people shall be brought under the blessings of this benevolent art, and the cry and despair coming from the hearts of the little children shall be banished from the ears of men.

When the possibilities and significance of Orthodontia are fully recognized by the world, there shall be recorded for dentistry one of the greatest achievements and greatest tributes that have ever fallen to the fortunate lot of any calling."

Does the phrase "when all the children of all the people shall be brought under the blessing of this benevolent art" mean anything to you? It must, or you would not be here at this time.

Statistics tell us that there are 621,900 children of school age in the Province of Ontario; we are told that probably 70% of human dentures present malocclusions of sufficient severity to warrant orthodontic treatment; or, in other words, there are 435,330 children at this time, in Ontario, who should be under orthodontic treatment. There are twelve orthodontists in Ontario. If each were to start and dismiss fifty cases each year, 600 or .0013% of your children would be cared for. Just for argument, let us assume that the 200 dentists of Ontario who are practising more or less Orthodontia were all limiting their practices to Orthodontia and were carrying fifty cases per year, you would still be treating but .0228% of the malocclusions, and 425,330 children would still "go begging." This may all seem ludicrous, but it is a fact nevertheless.

Let us be a little more sane in our figures. It has often been stated that but 10% of the people receive dental care. This means that 43,530 should be receiving orthodontic attention annually in Ontario. Are they? No! Probably less than .0013% are.

Again, if each of your 1,837 dentists were to treat, under present conditions of orthodontic practice, an average of ten cases per year, the total would reach something like 18,370 of the 435,330 cases calling for attention. If we again assume the 10% previously referred to, there is still a deficiency of 25,163, and Dr. Johnson's appeal for "all of the children of all of the people" becomes an idealistic vision which will probably never be realized.

Of course, we all understand that the foregoing figures present conditions which are practically insurmountable; that the nature of orthodontic treatment as now conceived must, from necessity, leave many thousands of the present generation of children to grow up with irregular teeth and to suffer the inevitable consequences later in life. But such an alibi does not excuse us from doing some deep thinking.

Orthodontia for the masses is a problem of deep concern to all

interested in the welfare of our future citizens, and it should be one of intense concern to the members of our profession, because we have the desire to see dentistry attain a higher plane in the medical art, or better, in health service. The figures presented are an evidence that the surface is barely being scratched, and the ratio is not being reduced, partially because there are countless numbers of our professional brothers who are ready to acclaim that the problem is one that cannot be solved. In view of the seriousness of the situation—the appalling number of children in need of this class of service—it becomes our obligation to at least undertake a partial solution of the problem.

One outstanding defect in the present plan of coping with malocclusion is the fairly deeply rooted idea that the family dentist is not qualified to practise orthodontia; if that be so, *why* is it so? The answer may be found in the following premises:

- (a) He has not comprehended the opportunity knocking at his door;
or,
- (b) He may not have been sufficiently impressed during his student days; or
- (c) He may be possessed of the idea that it is a branch of practice for the "specialist" only.

Your essayist will attempt to analyze these premises in the following paragraphs, with the hope that it may eventually lead to "the dawning of a better day." The answers will be considered in an inverse order.

Orthodontia, when practised as a specialty, becomes one of the most fascinating branches of dentistry. Still as such, it calls for a genuine liking for the subject, a willingness to undergo many vicissitudes, much preparation and special study, a broad experience, a high order of technical skill, a systematized office routine, a special equipment, a relatively long period of treatment, a coping with difficult or unusual conditions and an emolument which "makes a man worth his hire." It has been stated that a large proportion of the population is financially unable to pay for the services of the orthodontic specialist. This is probably true, but the conditions just enumerated as applied to a specialty should be obvious.

As a counterbalance to all the foregoing, your essayist believes that there is a great future "in the dawning"—a future which will change the present accepted teaching and practice of orthodontics, and with this change there will come a blessing to countless thousands of children who will receive benefit from the coming generations of dentists who will have been taught Preventive Orthodontics.

The conditions which have prevailed in most dental schools relative to the teaching of orthodontics have been of such a nature that the

student, when once graduated, promptly forgets all about it and proceeds to engage in those branches of practice that have been more thoroughly impressed upon him. Countless numbers of children pass through his portals each year, ignored as to the seriousness of conditions which should be readily recognized as factors to affect health and appearance in the years to come.

Let us remember that teachers are charged with the duty of imparting knowledge to the only group of men who, to-morrow, should be qualified to express a valued opinion of how the mouths and teeth of our posterity can best be preserved.

Considering that the teachers of orthodontics are divided as to how the subject should be taught, it is no wonder that the student is not stimulated. If the teacher is confirmed in the belief that the science of orthodontics is not for the college student, nor for the family dentist, then let us find a teacher with another vision who will impart at least the rudiments of the science or such information as will render a service to the public and to our profession. Your essayist is in favour of the qualified specialist going as far as he likes, but it should not be forgotten that all dentists have an obligation to the parents; their confidence entitles them to advice upon oral conditions present and future, and further, we have a still greater obligation to the children, for they are unable to make decisions for themselves.

There is no excuse for minimizing of importance of treatment, nor is ignorance a sufficient cloak for our indifference. It is inexcusable to delay or ignore this important phase in the care of children's teeth, and if we do so we are not playing the game fairly. It is equally inexcusable to call upon the commercial laboratory for a diagnosis, or an outline of treatment, or an appliance,—most of the experienced orthodontists will gladly give advice when called upon. The successful diagnosis and outline of treatment demands the visual examination of the living subject, not the casual examination of an inanimate plaster cast.

If the practice of orthodontia occupies the important position in health service which we think it does, and if the results of treatment have such an important bearing upon health, appearance and well-being as we believe they have, then it becomes the duty of the various institutions concerned with higher education to provide adequate facilities in every way for teaching the art. This implies a competent corps of instructors, and a large, well-equipped clinic, operating throughout the entire year for the benefit of both student and patient, laboratories, technical apparatus, research work and so on. There is no just reason why this department should not have the same advantages that are offered in the other departments of clinical instruction in our univer-

sities or institutions for health service. Compare orthodontic instruction, particularly clinical instruction, with that of either operative or prosthetic dentistry, and it is left so far in the rear that it accomplishes little for the student and still less for humanity. The manner in which this subject has been (and still is) taught in most dental schools is deplorable.

It is not intended to advocate the making of specialists in such a course of instruction (except as Graduate Courses, leading to a degree, might be organized), but rather to serve humanity and thus serve ourselves. Again the counterbalance, teach Preventive Orthodontics.

Mayo issued a challenge in his marked statement when he said that the next great step in advance in preventive medicine was in the hands of the dental profession and asked if we would meet it. We accepted his dictum and the reply has been most favourable. The ever increasing number of malocclusions has a direct bearing upon general health and the recognition and elimination of the evident causes presents another challenge to our profession which calls for a combined effort to combat it. If the contributing factors could be strongly enough impressed upon the family dentist, he has the opportunity of rendering a greater orthodontic service in a community than a dozen orthodontic specialists combined. Sounds like a rather extravagant statement, doesn't it? But it can be done; practise Preventive Orthodontia.

The simplest definition of Orthodontia is that of Angle. It is defined as "that science which has for its object the correction of malocclusion of the teeth." The term "Preventive Orthodontia" is perhaps a trifle ambiguous, because taken in the strictest sense, it would mean the preventing of orthodontic treatment, whereas in reality the interpretation we wish to put upon it is to prevent the necessity for orthodontic treatment; this is to be accomplished by mitigating or caring for the impending malocclusion in its incipiency. In this event much of the treatment need not necessitate the use of appliances at all, or at any rate, it will be of a much simplified orthodontic nature.

If we admit of the truth, most of us do not covet "children's dentistry" and therefore we fail in our duty at the very outset. If the deciduous dentures are kept in a relatively normal condition until these precious teeth have served their purpose, the number of malocclusions will be vastly reduced.

The opportunity for the family dentist begins very early, and the confidence which is reposed in him is quite akin to that which the family physician enjoys. The advice which may be given the expectant mother with reference to diet as related to calcium metabolism can be given in a manner so as to create a desire for the right foods, such as will

build hard, strong teeth for her babe. This supercedes the orthodontist's opportunity by far.

Without entering upon any prolonged discussion of the etiological factors which cause malocclusion, it is well for us to remember that they can be readily divided into congenital and acquired causes, and we now know that the congenital conditions play a much more important role than we have realized; therefore, we should stress them with our patients.

It should further be remembered that these congenital factors can be very largely controlled, especially those relating to diet, health and hygiene. It is here that the dentist can exercise a wonderful influence, and it is just as much within his province to promulgate this information as it is for him to advise treatment for acquired malocclusions or other dental ills.

But few people realize that the pre-natal period has a very important bearing upon the teeth of the child. We know, but the layman does not know, that in this period the crowns of all the deciduous teeth and the permanent ones as well, except the second and third molars, are being definitely formed. The strength, character and vitality of these teeth depends, in a great degree, upon the food the mother eats.

During the first year or two after birth, the diet of the child has much to do with the development of the teeth, bones and muscles concerned with the future dentition. And again their strength and character comes through the mother's food, this time in the form of breast milk which provides the very best foundation for the teeth as well as the general health of the infant.

Bone growth depends considerably upon stimulation, stimulation upon function, and the muscular function in the act of breast feeding is by far more important, for the development of the tissues of mastication, the lower third of the face, the whole head (through the sinuses) and thorax, than we have ever realized. Suffice it to say at this time that the dentist should urge breast feeding as a factor in preventing malocclusion.

Just one more reference to diet as an element in preventing malocclusion,—and that is through the growing period or up to adolescence. During this time the child's system has many severe drains upon metabolism and it is of the utmost importance that he be guided to plenty of the right kind of food. It is during this age that children develop their likes and dislikes for foods, and emphasis should be laid upon the importance of those articles that are rich in the mineral content, and, too, those which require thorough mastication. It is during this period that much of the mysterious is taking place with the glands of internal secretion, now recognized as having a bearing upon dentition,

and these organs also must receive their activating principles from our food, so there may be a dual or parallel action in certain foods. It is not within the scope of this paper to discuss the question of diet, and indeed it is hardly necessary, as your own Dr. Seccombe has taught, written and discussed the problem of foods, diet and nutrition with you for some years..

There are numerous other congenital influences which we will but mention in passing; nevertheless, they are important and merit consideration. Included are: cleft palate; anomalies in number, form and size of the teeth; abnormal labial fraenum; abnormal size of tongue; syphilis; tuberculosis, and so on.

The acquired causes should at once be of interest to the family dentist because these conditions are immediately within his domain. These factors have been repeatedly mentioned in our literature and elsewhere, and to some it may seem like a useless repetition, but it remains that operative procedures are practised daily, which will eventually result in malocclusion otherwise possible of prevention. The following causative conditions are some of the common ones and are so "hackneyed" that I mention them with timidity:—but let us picture the results.

Premature loss of deciduous teeth—Generally speaking, the premature loss of one of the six anteriors means a lack of development of the supporting bone, with a narrowing, crowding or shortening effect in the bone and in the arc formed by the permanent teeth. The "line of occlusion," which tersely stated is the line of greatest occlusal contact, is fore-shortened and the permanent teeth erupt out of harmony with it. Normally the incisal edge of the developing permanent tooth touches the lingual aspect of the root of the deciduous tooth, which root is pressed labially, causing bone growth throughout its region, to be followed by absorption as the eruptive forces and root growth of the developing tooth progress. If this relationship is not maintained there will usually be a lack of development, and malocclusion.

The premature loss of the maxillary temporary cuspid usually results in the rotation or the labial or lingual inclination of the crown of the permanent lateral, influenced by the contact of the developing cuspid with the lateral's root.

The cuspid frequently occupies a prominent labial position or may not attain its full length, becoming the characteristic "buck tooth." This same position of the cuspid may result from approximal caries with the shortening of the mesio-distal diameters of the deciduous molars and their drifting forward because of the forward pressure of the developing first permanent molars. The premature loss of the mandibular deciduous cuspid usually results in a crowding of the incisors, although the cuspids may be in a labial position;—it seems

to be a case of the "weaker sister's" yielding, or "a survival of the fittest," as you please.

The early loss of the temporary molars is a serious matter. The probable mesial drifting of the permanent molars and the general lack of development in this portion of the jaws, especially when occurring in the upper, results in a condition which is apt to deceive one in arriving at the classification of the case. The upper first molars being mesial to their normal position, the case is very apt to be placed in Class II. When the permanent molars drift mesially a mistaken treatment may be outlined, the anterior teeth moved forward instead of the molar backward, resulting in complications which seriously mar facial balance. It is not an easy matter to move molars distally, and therefore if the temporary molars must be sacrificed prematurely, the necessity for space maintainers should be apparent. Observance of this precaution becomes all the more essential if the sacrifice must be made early because if the second permanent molars are included in the shifting the ratio of complication is greatly increased. We have all seen cuspids and bicuspid impacted, unerupted or occupying lingual or buccal positions, due to the condition just mentioned, and many of these have been ruthlessly extracted.

Prolonged retention of the deciduous teeth.—The most common result under this heading is the deflection of the succeeding tooth to the buccal (labial) or lingual of the predecessor, and when the condition prevails in the anteriors there is usually a settling together in the arch which necessitates operative measures (expansion) to restore the tooth to the line of occlusion. When deciduous molars are retained very long beyond their normal shedding time, because of their increased width over their successors, there are likely to be spaces between the permanent teeth; sometimes these spaces may close under the favourable influence of the forces of mastication, otherwise the gum tissues in these locations are prone to injury.

Deciduous teeth retained for any considerable time beyond that of their normal loss should be radiographed so as to determine the procedure necessary, for, if allowed to remain, they are quite sure to be lost in early adult life, when orthodontic remedies cannot be so readily carried on. The remedial measures for congenitally absent or deeply seated unerupted teeth had better be assigned to one experienced in orthodontics. In these cases not only is expansion of the arches and bone stimulation indicated, but usually the bodily movement of several teeth as well is called for.

Improper restoration of surfaces lost through caries results in a lack of development of the supporting structures because of drifting in the case of the buccal teeth, or if in the anterior portion of the arch because

of a narrowing induced by muscular pressure of the lips and cheeks. Restorations within approximal or occlusal surfaces should be made to conform with the anatomical conditions and from materials that are durable and not subject to change in form, as are the cements and gutta perchas. A "slab-sided" flat tilting occlusal restoration may cause an opposing tooth to be deflected, to say nothing of the possible establishing of an unsightly prognathism or retrusion of the entire mandible.

The first permanent molar is probably the most important tooth in the mouth, and the dentist should always be on the alert to see that these teeth are under favourable influences to guide them to their proper positions. These four teeth determine the relation of the mandible to the maxilla and have a pronounced bearing upon the vertical development of the anteriors and upon the "bite," and further distribute the forces so as to mould the bones of the lower third of the face. The statement has been made repeatedly that the loss of these teeth causes more malocclusions than any other factor.

The extraction of a single lower first molar results in a tipping forward of the corresponding second and third molars; the incline formed by the occlusal surfaces of these latter teeth may cause the mandible to be unilaterally retruded, the lower anteriors to assume a lingual inclination endangering the linguo-gingival tissues of the maxillary region and a retruded ("rabbit tooth") position of the upper centrals; the laterals appear to be crowded and protrude labially, or they too may be retruded, in which event the canines are more or less crowded and prominent. The retrusion of these anterior teeth, both upper and lower, is caused by muscular pressure of the lower lip. The effect upon facial balance is noticeable; the mandible appears retruded, the lower lip heavy and curled outward with a deep horizontal groove underneath it. If both lower molars are removed, you have a "double dose" of the above conditions.

If one or both of the upper first molars are prematurely extracted there is apt to be a false lower protrusion, which in reality is a lack of development of the pre-maxillary region, the teeth posterior tilt mesially and the bicuspid drift distally leaving "meat holes," the median line noticeably shifts to the side of the single extraction and the effect upon facial balance is unpleasant, as the concavity underneath the nose and of the upper lip is pronounced.

If all four first molars are extracted, the effect upon the face is very unpleasant. There is a pronounced vertical shortening, with a decided concavity to the lips from the base of the nose to the chin, and these persons are doomed to carry the appearance of edentulous mouths of long standing. The posterior teeth tilt forward and the anteriors

distally. The symmetrical extraction of all four first molars was a procedure formerly advocated and within the memory of many of our older practitioners. Happily, the custom has long since been discontinued, for it wrecked the efficiency, health and appearance of many a mouth.

Habits and interference with respiration are potent factors in establishing malocclusions. Most habits may be broken if persistently guarded against; these therefore fall within the category of preventive orthodontia. Nervous habits are not always readily recognized nor so easily broken, but they must be sought out if certain malocclusions persistently resist treatment. The principal functional habit is mouth breathing. This condition presents a vicious cycle, for mouth-breathing causes malocclusion and malocclusion causes mouth-breathing; neither condition can be cured without the removal of the offending factor. Other common habits which must be broken are thumb sucking, use of pacifiers, lip, nail or pencil biting, sleeping positions, resting the chin in the palm of the hand, and so on.

Dr. Frederick B. Noyes, in a paper on "Prevention of Malocclusion," published in the Chicago Dental Society Bulletin of February 27th, 1923, gives some very valuable information regarding habits; he says, in substance, that thumb sucking in young children is probably caused either by hunger or by irritation of the mucous membrane of the naso-pharynx, in which event sucking the thumb seems to give a sense of relief by increasing the secretions and moistening the membrane. The hunger sensation may be due to a deficiency in food, either in amount or a lack of balance in its elements. Such contrivances as tying up the chin, strapping the mouth, finger mitts, and so on, are but adjuncts in breaking the habit. The better remedy for combating is, first, to determine the cause and remove it if possible, then to establish in the subconscious mind a condition which is repulsive to the favourite habit and which will inhibit it as soon as the indulgence is desired. The practice of coating the finger with aloes, quassia, or other disagreeable substances, owes its efficiency to this principle. The difficulty in establishing the inhibiting association varies in different children, but it is possible.

Mouth breathing is sometimes indulged in as a persistent habit, even after the removal of the hypertrophied tissue in the naso-pharynx and the correction of malocclusion. In this event both conditions are apt to recur, whereas, if the habit is broken along with the operative measures, the corrected occlusion will prevail. Many Class II cases have recurred after treatment because of an incomplete appreciation of the above.

I am also indebted to Dr. Noyes for a suggestion regarding the

vigorous exercising of the muscles of respiration in establishing normal function. The following remedy is simple and correct in principle. If a boy would close his lips every time he started to school or upon some other errand, and then run as hard as he could, forcing respiration through the nose until he felt as though he would explode, and then stop running, but continue to breathe through the nose until the respiration had returned to the normal number per minute,—keeping this up every day for several months would bring about a change and he would no longer be a mouth breather. Incidentally, he would have increased his lung capacity and chest development in such a way as to be an asset to him at the age of fifty.

Much more might be said with reference to breaking up habits in the prevention of malocclusion, but time does not permit.

There are several diagnostic aids with which every dentist should be familiar and as these evidences of impending malocclusions are present in early childhood, we are thus early able to undertake treatment, which is the underlying thought of this whole paper,—to practise preventive orthodontia.

Dr. E. A. Bogue blazed a trail with his investigations and writings under the caption "Orthodontia of the Deciduous Teeth," which articles appeared at intervals in *The Dental Digest* from about 1900 to 1920. His deductions were based largely upon observation rather than scientific investigation, but they are sufficiently accurate to be classed as aids in diagnosis. The more recent work of Dr. F. L. Stanton of New York is based upon extensive investigations in dental engineering and arch predetermination. The work of Stanton (reported in numerous articles during the past ten years) is invaluable and is destined to be a great gift in the field of preventive orthodontia.

If, in the denture of a child at about five years of age, the teeth stand, contact to contact, in a perfect row, and "like so many pearls upon a string," the condition may be said to constitute a malocclusion, and a serious complication in the permanent denture is more than likely to follow. This indicates a lack of development in the supporting bone. At the age just mentioned there should be a definite spacing between all of the deciduous teeth except the molars; this is Nature's provision and she is growing interstitial bone so as to accommodate the wider permanent teeth that are developing. Lack of definite and pronounced spacing indicates the necessity for immediate expansion.

Bogue has been insistent upon the theory that unless the distance from the linguo-gingival prominence of one second deciduous molar across the arch (upper) to its mate is more than 1.10 inches, there is a definite lack of growth and development and that Nature unaided cannot spread the arch and a progressively narrowed condition will

prevail; therefore, again, is expansion immediately indicated. He states rather arbitrarily that the distance should be 1.33 to 1.35 inches and supports this contention with arguments which time does not permit of our presenting here. He makes the further interesting statement that from 75 per cent. to 95 per cent. of arches are narrowed by systemic weakness and lack of vigour.

Stanton gives us the following interesting diagnostic measurement which is applicable to neutro-occlusion (Class I) cases, and as previously stated, the deduction is based upon the examination of a great many dentures; the measurement between the mesial contacts of temporary cuspids should be equal to the length of the temporary side unit (being the distance from the mesial of the cuspid to the distal of the second temporary molar). If the anterior measurement is not equal to the side measurement, the difference between the two indicates the amount of expansion required for both upper and lower jaws.

In addition to the above indications for treatment are those which should be visible to even the inexperienced eye; referring to those conditions known as Classes II and III, which deformities are frequently present in the deciduous dentures and call for early treatment.

It should be obvious that the time for undertaking treatment of the deciduous dentures should be relatively early, and before absorption of the roots of the teeth has progressed, when the anchorage is unstable and the crowns only of the teeth will be moved; meaning that the desired expansion is not gained and that the permanent teeth when they erupt will not occupy the anticipated positions.

Another decided advantage in moving teeth thus early is that the bone is more plastic and cell-proliferation quicker and more permanent. It should be apparent also that all treatment wherein a change of facial contour or balance is desired, as in mesiocclusion or distocclusion cases should also be undertaken relatively early.

Out of the past with its conglomerate plans and terminology for the classification of malocclusion, came the definite method of Angle which, while criticized by some authors, serves as an excellent basis (for the beginner at least) upon which to make a start. Angle uses the upper first permanent molar as the "key to occlusion," accepting its relative constancy in position as sufficient, and from this point judges the relative position of the other teeth (of both arches) and their supporting structures. If the first permanent mandibular molar occludes with the corresponding maxillary molar so that the mesiobuccal cusp of the upper rests in the mesiobuccal groove of the lower, the case, regardless of how "jumbled up" the other teeth may be, is known as Class I. If the mesiobuccal groove of the lower occludes in any degree more than half a cusp to the distal of the upper, it is known as a Class II.

case, and if the reverse prevails, it is a Class III case. The classification of the case has a direct relationship to the manner of treatment and therefore one should be thoroughly familiar with this step before undertaking the treatment or planning the appliance to be used.

The terminology introduced by Dr. B. E. Lischer, of St. Louis, is preferred by many Orthodontists to that of Angle. Lischer suggests the following terms: Neutroclusion, Distocclusion and Mesioclusion, for the three great classes of irregularities. There are many advantages in the use of Lischer's terms, as they are based upon scientific terminology and immediately indicate the relationship of the mandibular tissue to the maxillary tissue, which is not the case when the words "Class one," "two," or "three" are used.

There are several other matters which should be looked upon as prime requisites preliminary to treatment. A definite office routine should be established and the patients for this class of service should be grouped so that the operator may better concentrate upon the work in hand; systematic examination and treatment, record methods instituted; full face and profile photographs should be obtained; full mouth x-rays are of inestimable value; accurate casts are essential (and it does not matter much whether these are from compound or plaster impressions as long as they are well executed); a definite understanding with the parent relative to co-operation, probable duration of the active treatment and retention periods and the approximate cost and mode of payment. There are many other conditions which will present themselves to the thoughtful and conscientious operator which we will not try to include here.

At this point, let us make a hasty summary of the thoughts presented:

1. Malocclusion is on the increase and its prevalence demands a change in the concept of the practice of orthodontia,—the opportunity seems to be comprehended in the phrase "Preventive Orthodontia."
2. The present accepted teaching of the science is not in accord with modern educational standards in the healing arts.
3. Nutrition and metabolism, pre-natal, ante-natal and in early childhood must be given more attention.
4. Nature will not and can not, unaided, stimulate narrow, under-developed arches to the necessary proportions for full function, health and balance.
5. Bone responds more readily to stimuli in the young subject, and a better dental organization as well as a better general health and facial harmony is assured as the result of early orthodontic measures.
6. The preservation of a so-called "normal" deciduous denture to its full term is essential. This implies a better appreciation of growth,

development and function of the child's dental apparatus and associated structures than many of us display in our daily routine.

In concluding this portion of my presentation and before starting the lantern talk dealing with treatment and simple appliances, your essayist wishes to make a statement which he has repeatedly made: "Any dentist has a legal right to treat malocclusion, but he has no moral right to do so without study and preparation." If the family dentist will qualify and practise preventive measures in orthodontia, he will render a wonderful service to our greatest heritage, our children, and still leave for the specialist a vast amount of work which calls for a more thorough preparation and a more advanced technique in orthodontia than falls to the lot of the family dentist; such should be the sphere of the true "specialist"; there will always be cases that get beyond the deciduous denture age and into the transitional or permanent denture stage for him.

Eastern Ontario Dental Convention, 1926



SEVENTY-FIVE dentists and their friends registered at Stanley Island, Cornwall, in June, for the Annual Meeting of the E.O.D.A., and everybody had a splendid time. Aside from the regular scientific sessions, the ideal weather conditions that graced the occasion resulted in much good fellowship and many hours of enjoyment on the golf course. The time of the meeting was arranged to immediately precede the opening of the tourist season, the Convention being given exclusive use of the Hotel and Island, permitting the members to fraternize and be friends together without reserve.

Dr. R. E. Sparkes, of Kingston, was in attendance. He was present at the first meeting of the E.O.D.A., forty-nine years ago, and has not missed a single meeting since.

Mayor Cavanagh, of Cornwall, an active member of the Association, presided at the Annual Banquet, which was followed by a concert and dance. Much credit is due Dr. A. A. Smith, President of the Convention, and the other Cornwall dentists, who proved themselves such excellent hosts.

Among those present were Doctors Eudore Dubeau, A. W. Thornton, D. P. Mowry, A. W. McClelland, Theo. Cote, F. M. Wells, of Montreal, and A. E. Webster, W. E. Willmott, Fred. J. Conboy, Arthur W. Ellis, C. Alvin Snell, Robert J. Reade, Wallace Seccombe, of Toronto.

The next meeting will be the Golden Jubilee Meeting, and will be held in the City of Ottawa in 1927.

Periodontia for the General Practitioner*

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OUR essayist admits that the title of this paper may be open to criticism, as it is evident that the practice of periodontia by the general practitioner can not differ from that of the periodontist except possibly in degree. The importance to every practising dentist of the recognition of, and the necessity of dealing with periodontal lesions can scarcely be exaggerated. It is the basis of all successful dentistry. The placing of beautifully carved inlays in teeth whose supporting structures are all unknowingly breaking down, can equal only in folly the building of the proverbial house on the shifting sands. The writer most earnestly pleads for a changed attitude on the part of the average general practitioner towards periodontal disease.

Too often there is a feeling of pessimism which would, with a clearer comprehension of the etiological factors involved, and the faithful development of the technical skill to deal with these factors, be changed to one of optimism and even of enthusiasm. Always, there will be the few who, because of temperament and special training, can best practise periodontia as a specialty; but it will also be true, that upon the shoulders of the man in general practice falls the responsibility of recognizing the earlier signs of disease, which will enable him to prevent the extension of the lesion before it has progressed so far as to require special skill. This, as Dr. Pollia says, "places the general practitioner in the position of a bulwark protecting the masses from the advanced type of dental diseases." And there never was a time in the history of dentistry when the opportunities for keeping abreast with the progress of knowledge were so great as to-day. There never was a time when those with special knowledge were more willing to impart that knowledge to others. Doctors Stillman and McCall in the preface to their very excellent text book, "Clinical Periodontia," say, "The dissemination of knowledge which will assist our colleagues in the control of periodontoclasia furnishes the underlying motive of the publication of this book."

It is true that we have much yet to learn, and a perusal of our dental literature reveals great divergences of opinion regarding etiology. One well known writer prefers to retain the old term "pyorrhœa," speaks of it as a germ disease, and believes that the destruction of the supporting tissues depends upon bacteria only. Another regards constitutional conditions as the determining cause, and would probably

*Read before the Eastern Ontario Dental Association, Stanley Island, Cornwall, June 24th, 1926.

unwittingly recommend a sea voyage to a sailor. Another working along the lines of animal experimentation believes wrong diet to be the predominant factor; while others, misguided enthusiasts these, extol in most alluring words the wonderful virtues of some most marvellous drug, which holds out hopes to the gullible of a short and easy cure. Others, believing that all pathological conditions indicate disturbance of function, look to faulty occlusal relationships as the one all important initiating cause, which so depresses the vitality of the tissues as to render them an easy prey to invading micro-organisms.

Such diversity of opinion, while confusing to the casual reader, is a plain indication of the complexity of our problem; and we must at the outset recognize that there is always a combination of factors which, acting together, produce that destructive process which we designate periodontoclasia. The successful operator recognizes the wisdom of leaving nothing undone which will contribute to a satisfactory result. He will view the question with an open mind, weigh the evidence submitted, and determine the truth of any theory by the success which attends its application in practice. Your essayist does not wish to convey the impression that the writers whose various theories are above given, are narrow in their outlook. Generally speaking they are not, and in practice will be found to deal with the combination of factors which are revealed. But there undoubtedly does exist a great difference of opinion as to the relative importance of the causes.

To secure the happiest results let us then at all times render the occlusion as innocuous as possible; see that reasonable attention be given to a sane diet and hygienic living; eliminate the infective factor by the removal of every source of gingival irritation; and secure the patient's most earnest co-operation in stimulating the resistance of the tissues to bacterial invasion, and the mechanical removal of the bacterial plaques, by thorough instruction in tooth brush massage. The constitutional factor cannot of course be ignored. In cases of diabetes, for instance, treatment would be contra-indicated. Consultation with the physician is at times imperative, and the dentist may, on occasion, be the means of directing the attention of the physician to some grave disorder.

Correct diagnosis is the one and only basis of successful results. Stillman says, "The whole secret of a broad success lies in diagnosis. The joy in periodontia lies in doing those acts which are indicated; the satisfaction in knowing that one's pre-operative study and diagnosis have been proved correct by cases recovering their health after treatment."

If then the general practitioner is to become the bulwark of protection which his relationship to his clientele demands, he must think more in terms of periodontal health. He has become expert in restor-

ative procedures, but his attention has been focused on the crown of the tooth. He must, however, become not less of a mechanic, but more of a diagnostician. If the extensive ravages of periclasia are to be averted, he must think first of the periodontium, the three essential component tissues of which are the alveolar process, the pericementum, and the gingivae. If his obligations in this regard are to be fulfilled, the order of procedure upon examination of the mouth should be somewhat as follows:

First look for mobility. This may be determined by digital pressure combined with palpation by means of an instrument, and also by sighting along the teeth, after first asking the patient to place the teeth in centric occlusion, and then requesting the various lateral and protrusive movements of the mandible. At the same time, if desired, a finger may be placed on the buccal or labial surfaces of the teeth under observation. Box has very conclusively shown the pathological changes occurring in the pericementum and alveolar process where mobility is evident before there are any other clinical manifestations. It is possible that in very young patients pathological changes may not have occurred, but even then perceptible mobility is to be regarded as a potential destructive factor. It will be found that many patients will have developed nervous habits, which cause them at times to place the teeth in abnormal stress. Variability of wearing qualities in filling materials, varying wearing qualities of the tooth structure, the shifting and tipping of teeth following the loss of even a single tooth, and the eruption of teeth, particularly the anterior teeth, into positions which mean occlusal disharmony, all play a part in producing interference during the various movements of the mandible.

Next look for changes in the colour and contour of the gingivae. Any departure from the normal is to be regarded as pathological. Box has given us twenty signs of incipient periodontal disease. Some of these I have endeavoured to visualize in the diagrams presented. Box presents to us the evidence of his research work, and leaves us to draw our own conclusions. It is my own personal conviction, based upon close clinical observation, that the predominant factor responsible for these lesions is faulty occlusal relationships. You may argue that some faulty metabolism is back of it all. You may place it any place in the etiological picture that you desire. But in order to get permanently satisfactory results you must deal with it. An analogy may be found in our management of dental caries. The Miller theory does not fully satisfy our minds, but while still searching for the truth, we apply what knowledge we have, and save the teeth.

Next let us look for pocket formation. Remembering that the gingival crevice is from one to two mm. in depth, and that anything

beyond this is pathological, and indicates a corresponding amount of destruction of bone, it will be astonishing to one who has not been persistently hunting for pockets how many can be found in a mouth with apparently healthy gingivae. Digital pressure on the gingivae is a valuable diagnostic aid, especially in a mouth presenting a normal appearance. Hemorrhage on such pressure indicating a mild gingivitis, or the exudation of pus showing a deeper seated lesion may be thus revealed. There are on the market instruments for measuring the depth of the pockets. These are marked off in millimetres and are highly desirable. Box's diagnostic probes are excellent for this purpose. Showing the patient the location and depth of such pockets by means of these probes arouses their interest, and is an added means of securing their active co-operation in gingival massage. Personally I like to use also No. 2 Clev.-Dent explorer with a delicate touch. There is no danger of wounding the tissues if the touch is sufficiently delicate. The curvature of the explorer enables it to follow the contour of the root surface. It is also in my hands invaluable in checking up the results of instrumentation on the root surface. It is important to note that very extensive pocket formation may have occurred without visible change in colour or contour of the gingivae.

We will now gain much additional information with a complete set of radiograms. In any advanced case this is imperative, and should generally be regarded as a routine procedure in making a diagnosis. Pollia truly says, "Only the radiograph can reveal the true extent of bone involvement. Not infrequently a mouth having a favourable clinical appearance has a surprising amount of diseased bone tissue." The radiograph is also of inestimable value in showing the early breaking down of the alveolar crest due to traumatic occlusion. And incidentally patients will more willingly acquiesce to corrective measures, when the radiographic evidence is pointed out, who might otherwise be reluctant to have their teeth ground. The term grinding the teeth is not a particularly happy one to use before the patient. It is rather too suggestive of some large grindstone with its voracious cutting qualities. A better phrase would be reshaping the teeth to overcome interference or modifying the bite to bring about a more harmonious relationship.

During the course of our examination, we will have made such records on the patient's chart as we think are needed. Such charting may be simple or elaborate, according to the temperament of the operator. But at least the location and approximate depth of all pockets should be indicated by heavy shading, and if all pockets are not noted in this examination, they will be found later when dealing with the individual teeth when doing instrumentation and then recorded;

the roots of pulpless teeth outlined; and where vitality tests have been made the results indicated; caries noted; all hopelessly diseased teeth marked to be extracted; and teeth at present missing so recorded.

We are ready now to answer the anxious patient's question, "Can any teeth be saved?" Upon what shall our answer be based? Let us put in this way. Our prognosis is unfavourable:

- a. If more than half of the alveolar support is lost as revealed by the radiograph. There will be some exceptions to this on single rooted teeth.
- b. If any one of the etiological factors present cannot be eliminated.
- c. If a tooth on the border line has to be used to stabilize a partial denture.
- d. If a tooth has an infected root canal.
- e. If the investing tissues possess a subnormal ability to react to remedial measures.
- f. If the patient's loyal and intelligent co-operation cannot be secured.

I would say further that if the presence of certain teeth is not in the interest of the best restorative work, they should be extracted. I agree with Leonard when he says, "The mouth should be stripped down to the point where disease can be treated and cured, and where reconstruction work can be put in that offers a probability of permanence."

We have now made our examination, charted our findings, and made a prognosis which holds out for the patient prospects of a reasonably permanent and happy result. We should next direct our attention to the elimination of the etiological factors in the order of their importance. In what might appropriately be termed a dirty mouth this would first consist in obtaining a more sanitary condition by scaling and polishing, and the institution of more vigorous measures of mouth hygiene on the part of the patient. No attempt should be made at this stage to enter the pockets which are present. Next extract all teeth which it has been determined to remove. In what might be called a clean mouth our attention should first be directed to the occlusal factor before scaling of the pockets is attempted. The influence of this factor is so profound in its depressing effect on the vitality of the tissues that a sharper response to our instrumentation is secured when the occlusal stress is first brought to within physiological limits. So varied is the reaction to abnormal stress that teeth hypersensitive to normal changes are frequently found to become normal when the stress is relieved. Sensitive areas at the cervical portion of the teeth seem to be often associated with this factor. The principles to be observed are to balance the occlusion as much as this is possible, bringing a

group of teeth in contact in lateral protrusive movements where possibly only one touched before, thus distributing the load, and to so adjust the occlusal planes of the molars and bicuspid as to bring the component forces of mastication in the direction of the long axis of the tooth. This I have attempted to show in the diagrams presented. In locating the spots to be ground, carbon paper is a guide, but is not to be too much relied on. It may give a false marking owing to its stiffness. I have found Rudischhauser's the best. A paste composed of lamp black and white vaseline, as suggested by Bricker, although mussy, is helpful. The opposing teeth are dried and a thin coating of paste applied to the tooth or teeth of one jaw. Closing of the teeth and subsequent movement of the mandible indicates the spots requiring grinding. Experience as always is the great teacher. The mounting of models on an anatomical articulator enables one to see the points of interference from various angles not possible in simply looking in the mouth. While not necessary as a routine measure, it is exceedingly valuable in cases requiring extensive correction. No phase of periodontal technique is more exacting in its demands on the operator, but as compensation none is more gratifying in its results when thoroughly performed.

Having now obtained a satisfactory occlusion in a reasonably well cared for mouth, our attention is next directed to the matter of more intensive brushing, in order to secure the advantages of the stimulating effects of tooth brush massage. Such brushing has been well described by Charters, Stillman, Hartzell, and others. And for the purpose of such instruction, a demonstration in the mouth of the patient is absolutely necessary. Merely describing the method is in my opinion futile. In fact, it is the exceptional patient in any case who masters it in one lesson. Considerable tact, though, is required to avoid wounding the susceptibilities of the patient when further instruction is needed. The use of the disclosing stain is helpful in this respect. A lady of refinement who would be shocked to learn that she had failed to remove all food debris, takes kindly to the staining of bacterial plaques, and the demonstration of more efficient means of removing them.

Our final step is the instrumentation on the root surfaces. It is to be feared that the average dentist, when a case of so called pyorrhea presents itself, reaches for his scalers the first thing. But we have seen the importance of the steps leading up to this. We know that after taking such steps, nature is now able to put forth her best effort to bring about a rapid recovery. What instruments shall we use? Sickles, files, planes, and curettes all have their place. There was a time when the writer thought that one particular type of instrument was superior to all others, but he has long since passed that point. I

is the man behind the instrument that is all important. It is pretty well agreed, however, that whatever type of instrument is used for the initial scaling, a curette is indicated for the final apoxesis, for the reasons that this type of instrument will likely leave the root surface freer from grooves and scratches, and it will at the same time, owing to its double edge, lightly curette the surface of the adjacent soft tissue. In my opinion the following are essential requirements for success: visualization of the histological anatomy of the parts; an understanding of the pathological changes which have occurred; a touch of the most delicate character; patience developed to the highest degree; and willingness to spend any amount of time on one tooth, the length of time being whatever is necessary to be thorough. The technical skill required is undoubtedly exacting. What is chiefly required, I think, is the will to patiently master it. Trying different instruments on recently extracted teeth is highly educational. But having acquired the technical skill the results are correspondingly gratifying. And I believe that the sense of touch is not as highly developed in any of us as it may become by desire and persistent practice. During the course of our work we will of course have smoothed the margins of all fillings. And for this purpose files are best adapted. We will thoroughly polish the teeth also. Narrow silk prophylactic tape charged with XXX silex is especially useful for the cervical portion of the teeth. The method of use consists in wrapping it around the tooth, and crossing it before pulling back and forth. This produces an up and down motion and avoids the tendency to polish in one spot only. The whole principle of polishing the teeth is to make it as easy as possible for the patient to do his or her part. It is the application to our work of the principle of legislation laid down by Gladstone, when he said that "all legislation should be so framed as to make it as easy as possible to do right, and as difficult as possible to do wrong." After the work is completed patients should be seen as frequently as is necessary to assist them in maintaining a hygienic condition. Further use of the disclosing stain to indicate points that are being missed is a most useful adjunct. Always the emphasis should be placed on the thought that we are assisting them. And if our judgment was correct, and we have left nothing undone which we should have done, the onus of maintaining a healthy result must be placed on the patient. And it is well, I think, that patients should realize this at the outset. Granting that these various and somewhat exacting conditions are fulfilled, then we may experience that joy of which Stillman speaks, "of seeing one's pre-operative study and diagnosis proved correct by cases recovering their health after treatment." And in conclusion, let me say that I know of no joy in the practice of dentistry to quite equal it.

Dental Manifestations in a Case of Generalized Fibrocystic Disease.*

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IN September, 1925, a man, aged fifty-one, was referred to the dental department of the Mayo Clinic for examination. He had come to the clinic complaining of pain in the back hips and legs, which had begun two years previously. He stated that he had first noticed a small lump on the right side of the lower jaw two years before. This had grown very slowly and he had not noticed any increase in its size during the last year. He complained of having had considerable pain in this area during the prev-

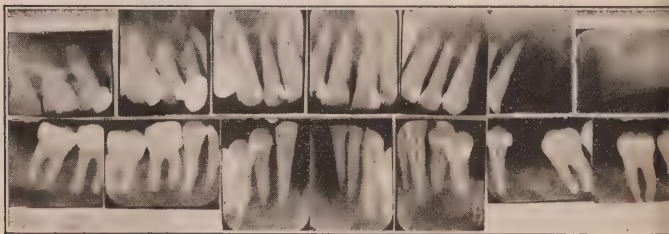


Fig. 1. Full-mouth roentgenogram of the teeth in this case.

ious winter, and occasional dull aches since then. Three months previous to his registration in the clinic some teeth had been removed from the right upper jaw. The dentist on curetting the sockets following extraction had noted a honeycomb consistency of the alveolus and had advised the extraction of all remaining teeth.

The patient was seen to have considerable swelling on the right side of the lower jaw, which was round in outline and bony in feel. In the roentgenograms the bone of the maxillae and mandible appeared to be very porous, and numerous cyst-like areas were seen. The largest of these involved the anterior portion of the body of the mandible on the right side. Other large areas could be seen in the following places (1) above the apices of the upper left cuspid, and lateral and central incisors; (2) around the apex of the upper right cuspid; (3) distal to

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the lower left second molar and about midway between the superior and inferior borders of the mandible; (4) inferior to the lower left second molar, and (5) inferior to the bicuspid and cuspid on the lower left side of the mandible (Fig. 1). Numerous other small cystic areas could be seen scattered throughout the jaws. All the teeth situated close to the larger cystic areas responded normally to the electric test for vitality.

Roentgenographic examination of the other parts of the body revealed multiple cysts of the ribs, vertebrae and long bones. After consultation, the diagnosis was generalized fibrocystic disease, as described by von Recklinghausen. A lesion of the fifth and sixth dorsal vertebrae was thought to account for most of the symptoms.

This case is of interest because the dental roentgenograms led to the suspicion of some generalized bone disease and to the suggestion that a thorough examination of the rest of the osseous system was required.

SODIUM AND POTASSIUM come in a sealed glass tube. In preparing for the work this tube should be filed at a point opposite the sodium and potassium, which can be plainly seen through the glass. The tube is broken at this point. When through using the tube it should be carefully sealed with hard wax. The tooth should be covered up very carefully with the rubber dam and the pulp chamber opened in the usual manner. Then the pulp canal should be cleansed as best you can with pulp removers and canal cleansers, and a small amount of the sodium and potassium picked up on the end of a broach and carried as far up into the canal as possible. If there is much moisture in the canal there will be slight explosions as the sodium and potassium unite with this moisture, but no harm results from these explosions. Carrying the sodium and potassium through the canal should be repeated until you feel that the canal is pretty well cleansed, being careful, extremely careful, not to carry any through the apex of the canal. It should then be washed with sterile water, washing it as many times as is necessary to show no discoloration on a wisp of cotton. If there has been evidence of infection beyond the apex, the canal should be dressed with Dichloramine-T and Chlorocasein; in fact, this is probably the best dressing in any putrescent case. If it is a case where a pulp has been recently removed, it can be filled at once. The sodium and potassium unite with the organic contents of a canal, saponifying them so it is equally efficacious whether the pulp is broken down or not.

—*Dental Digest.*

A Comparison of Nitrous Oxid-Oxygen and Ethylene-Oxygen Anaesthesia in Office Practice

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DUE to the fact that ninety per cent. of dental oral surgical cases are operated on in our office surgeries, rather than in the hospital, and that we are not prepared to keep the patient over night or longer, it is imperative that we select an anæsthetic with the least possible postoperative effect. It has been my experience as well as others, that there is less postoperative pain and systemic disturbance when certain general anæsthetics are given, than in the case when conductive anæsthesia is used. I want you to understand that conductive anæsthesia, in skilled hands, is an efficient anæsthetic. I use it when indicated and have yet to find a patient whom I could not successfully block, for any operation which I wished to perform.

At the present writing the two most frequently used general anæsthetics for dental oral surgery, or exodontia, are ethylene and nitrous oxid. They come nearer meeting the requirements of an *ideal anæsthetic* than any others. They are used separately, in combination with oxygen or together in combination with oxygen, or oxygen with 5 % carbon dioxide.

First of all let us determine what an ideal anæsthetic should be.

An *ideal anæsthetic* would be one which is—

1. Pleasant to take.
2. Easy to administer.
3. Efficient in its action.
4. Without danger to life.
5. Without postoperative effects.

At present we fall a little short of this *ideal*, but we are progressing toward its attainment.

In order to increase the margin of safety with these anæsthetics, all patients should be examined, with a view to determining their fitness for general narcosis. Next the anæsthetist should be thoroughly grounded in the signs and symptoms of anæsthesia, which means an ability to correctly interpret the pupillary reflex; the mode and rhythm of respiration, the muscular tone, and all other available data.

In a comparison of these anæsthetic agents, the mentioned precautions were fully met.

The different techniques of administration used were: *Ethylene Oxygen*: Ethylene 90 % + Oxygen 10 % until the patient reached the proper

anæsthetic plane. The mouth was opened, throat packed and oxygen per cent. raised to 20% if permissible. The flow of the gases was maintained sufficiently to keep the breathing bag up to a slight tension. As the operation progressed, the oxygen per cent. was raised or lowered, according to the anæsthetic plane of the patient. Intrapulmonary tension was maintained to increase absorption of gases.

Ethylene and Nitrous Oxid plus Oxygen: Ethylene and Nitrous Oxid equal parts, plus Oxygen and rebreathing with the same technique as already mentioned, was tried out, and I noted an improvement in the patients' general condition during the narcosis. The patients breathed easier, their general appearance on the table was more like a normal sleeper, there was somewhat less nausea postoperatively, in comparison with that produced by ethylene and oxygen.

Nitrous Oxid and Oxygen: Nitrous Oxid 93% and Oxygen 7% to start with, which percentages were maintained for one minute. If the patients showed decided susceptibility this mixture was continued, until the proper anæsthetic plane was reached. If they were not of that type, the oxygen was removed, for a sufficient period to get the proper depth, and then added according to the patients' oxygen need; starting with 7%, and raising as necessary. The mouth was then opened, the throat packed and intrapulmonary pressure maintained.

Conclusions: With *Ethylene and Oxygen* the odour of the anæsthetic was very disagreeable to the surgical team, and at times the patient noted this bad odour.

The narcosis was satisfactory and less skill was required to maintain it than was the case with nitrous oxid and oxygen.

Respiration slowed down perceptibly in comparison with nitrous oxid and oxygen.

Nausea was present in at least 40% of patients.

I had thoroughly cautioned my assistants that they must be sure that the fires under the sterilizer, water tanks, and autoclave were extinguished; and that if an electric wire should short to immediately shut off the emergency valve on the ethylene tank gauge.

Yet, with all these precautions taken, a visiting doctor started up an electric cautery and immediately the patient's head was enveloped in a mass of flames. By quick action the patient was saved from severe burns.

This caused me to try out a combination which I believed would not be inflammable or explosive, and would also reduce nausea.

So I decided to use equal parts of ethylene and nitrous oxid, combined with oxygen. This mixture was used some months with a great deal of satisfaction, until one day, there was a terrific explosion, the anæsthetic mask hitting the anæsthetist in the breast. The patient and anæsthetic machine were both afire.

By prompt action we were again fortunate in saving our patient.

On checking up the damage, we found the mask ruined by fire, the rubber bag on the machine missing; it had been blown into a thousand pieces.

Then and there I decided that no more ethylene or any of its combinations would be used on my patients; and what a relief it was to be rid of this fear of explosion, and dread of fire.

I am again using nitrous oxid and oxygen, and believe that I can accomplish as much with this anæsthetic as I ever did with ethylene, or its combinations.

This I know; it is not explosive or inflammable, for I have used the electric cautery in the mouth with it.

In summing up nitrous oxid and oxygen I would say this anæsthesia comes nearer meeting the requirements of an *ideal anæsthetic* than any other substance now known or in use, because:—

1. It is practically odourless, therefore easy to take and pleasant in action.
2. It is *not easy* to administer.
3. It is efficient in *skilled hands*.
4. It is less dangerous than any other anæsthetic in its anæsthetic action; and it is not explosive or does not catch fire.
5. Postoperative effects are practically nil and nausea is rare.

Even if you have no regard for your own life, or the lives of your assistants, you are morally and professionally bound to protect your patient's life. When you use ethylene, or any of its combinations, you violate your patient's faith, in placing his safety in your keeping.—*Anæsthesia and Analgesia, February, 1926.*

The Duties of a Dental Assistant

BY IDELLA BREAKSTONE, *Chicago, Ill.*



ADVANCEMENTS made within recent years in the practice of Dental and Oral Surgery have brought about a larger field for the dentist than ever before. This has necessitated, in the majority of instances, the employment of a competent assistant.

The duties of the assistant are many and varied. She must be efficient, as is expected of everyone in the business world, and must have definite qualifications fitting her for this technical position. She should be tactful and courteous in her dealing with the patients at all times.

The assistant should be trained to quickly grasp and anticipate the

wants of the dental surgeon in his operations, so as to be of the utmost help. In a word, she should be to the dentist what the assistant in an operating room is to the surgeon. A technical knowledge of dentistry is very essential, especially the mechanical side. The assistant should be able to mix cements, synthetics, alloys, pour models and cast inlays, and be able to polish them. To be able to do this saves a great deal of time for the dentist, which makes for greater efficiency.

The assistant should also understand the nature of each operation, whether it is to be a filling, extraction or prophylaxis, so as to have the necessary materials and instruments in readiness. If the doctor is to prepare a cavity for an inlay the cutting instruments should be on the tray in order, the wax heated for the impression, the temporary stopping and plastic instruments at hand so the doctor will not have to leave the chair. This service can only be given by careful observation on the part of the assistant and co-operation on the part of the doctor.

The general appearance of the office is of great importance as this is the first thing seen by the patient and therefore leaves a lasting impression. Everything about the office should be clean, including both the uniforms of the doctor and assistant; all instruments and materials not in use should be out of sight as much as possible, and all cotton and gauze which have been used should be completely out of sight, preferably in a closed receptacle. A fresh and sterile towel should be used with each patient and all appointments at the side of the chair should be spotless.

One of the most important things to know in a dental office, and one that is least known by the assistant, is the procedure of sterilizing dental instruments. It is well worth the assistant's time to know at least the rudiments of this vital subject. That is, she should know the length of time necessary under a sufficient amount of pressure to completely sterilize all instruments and materials. Sterilization in a dental office is just as important as in a hospital and should be followed out along the same, if smaller, lines. One cannot be too careful in this work, and the assistant who knows the advantages of high pressure sterilization over low pressure is the one who has kept up with the times along lines of modern dentistry.

In receiving patients the assistant should first of all familiarize herself with the patients' names. She should always be pleasant and courteous and if no appointment has been made should find out approximately the nature of the case and report to the doctor. If the patient has never called at the office before, the assistant should first get all the necessary information as to address, telephone number and reference. Next, the examination or record chart should be filled in with the history of the patient and be in readiness when the doctor arrives

at the chair. The assistant should stand close by so as to record the examination and nature of the work to be done.

The assistant should be at the office at least a half hour before the doctor to change the water in the sterilizer, get out the records of the patients expected that day and have the office looking neat and presentable before the doctor and patients arrive. She should also see if there is any laboratory work to be completed so it may be ready upon the arrival of the patient.

Aside from the technical and personal requirements, of great importance in the duties of the assistant, is her business ability. She must have at least the fundamentals of bookkeeping and indexing, also look after the supplies and never allow the stock to become exhausted. The indexing system should be infallible. The doctor and assistant should be able at a moment's notice to place their hand on the required record or chart. No dentist who considers himself equipped to successfully practise modern dentistry, no matter how small his practice may be, can neglect an up-to-date yet simple bookkeeping system.

The usual procedure in regard to payments is to require an initial deposit when the work is started. It would be rather difficult and out of place for the dentist to approach the patient for this payment, and it is therefore up to the assistant to do so. Experience has proven that if tactful and proper methods are used in approaching the patient on this matter no offence will be taken.

Statements should be sent to each patient on the first day of each month, and the assistant should keep close watch on delinquent accounts. One of the most convenient methods of doing this is to make a list each month of the accounts due, indicating those not responding. In this way, it is possible at any moment to submit the summary to the doctor and decide the next best way to bring about settlement of the account. It is a well-known fact that the longer an account remains unpaid the more difficult it is to collect.—*Dental News*.

ANOTHER EVERYDAY USE FOR ZINC OXIDE.—To keep cavities dry when inserting silicate fillings, zinc oxide is most useful. The rubber dam can often be dispensed with. The cavity is prepared in the ordinary way, and cleansed with the water syringe. A small piece of cotton-wool is placed in the cavity, very nearly filling it. A napkin is then placed round the mouth and zinc oxide powder is taken up on a wisp of wool and dabbed around the neck of the teeth. The junction of tooth and gum being moist, the zinc oxide adheres and forms a dry barrier for at least ten minutes. The silicate can be inserted and varnished, and the zinc oxide removed when the patient next brushes the teeth at home.—*British Dental Journal*.

What Constitutes Efficient Dental Service in a Hospital?

MEYER COHEN, D.D.S.

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ONSISTENT with the general drive on the "Care of the Mouth," there have appeared in dental periodicals of late several articles dealing with the necessity for properly organized dental service in hospitals, both for in-patient and out-patient clinics. Such articles are timely and constructive; for proper hospitalization without adequate dental service is wellnigh impractical, it is unfair to patients and institutions caring for them as well.

Aside from acute minor dental complaints, the obnoxiously filthy mouths so commonly seen in hospital wards, are a drawback in the practical routine and early recovery. Only intensive well organized dental follow-up could keep pace with the need. More important still is the assistance that a competent dental service can render the internist in his routine search for oral sepsis. Frequently are the medical complaints referable to disease in the mouth, and the elimination of that disease becomes paramount, or hospitalization is prolonged or unsuccessful. Nor can an out-patient clinic be successfully carried on without a properly organized dental service, for here many complaints present border-line cases, which absolutely demand the dentist's co-operation for diagnosis or surgical care. Unfortunately, only a few hospitals can boast of complete service and the care of oral disease is by no means a first consideration in the making up of a hospital curriculum. Indeed, this statement applies to the greater number of hospitals; for many hospitals have no dental service at all and still more have such services chiefly in name.

DENTAL SERVICE IN GREENPOINT HOSPITAL.

In contrast to the above is the Greenpoint Hospital of Brooklyn. Here, a dental and oral surgery service is being rendered which should prove exemplary and stimulating to other institutions.

At the Greenpoint Hospital, the department of oral surgery is a recognized service, on an equality with all other departments. The chief of that department is appointed on the recommendation of the Medical Board by the Commissioner of Public Welfare. To him is entrusted its organization for the care of hospital patients and out-patient clinic. It is then up to the head of that service to make good or quit. There is no favouritism, nor political influence connected with

it. Being a public institution (under the Department of Public Welfare) there are no emoluments, nor pecuniary strife and jealousies; hence, only the finest of motives and excellent *esprit de corps* obtains.

It is to that fine spirit and splendid co-operation, not only by the men on the other services, but also by the very capable and energetic medical director, that the remarkable growth of the dental service at Greenpoint Hospital may be attributed.

Beginning with one assistant in 1919 that service is now made up of an attending, an associate attending, six assistant attending, dental oral surgeons, and one dental interne, who serve the hospital; while fifteen dentists, together with those on the hospital service, are engaged in the treatment of patients in the out-patient clinic, three mornings every week.

The out-patient clinic staff is divided into three groups, thus each group of five men work under the direction of an assistant attending oral surgeon, and the latter is responsible to the head of the service. Each group is assigned to a fixed clinic day in the week, and throughout the year it continues to meet on that day; thus patients know exactly which day their surgeon is in attendance.

The surgeon in charge of the clinic for the day assigns each man of his group to a specific task. For example, one is assigned to diagnosis, another to administer anæsthetics, while two teams, each consisting of two men, assisted by the interne or nurse, do operative work. In this way, every man is enabled not only to concentrate on his particular duty, but is also directly responsible for the accomplishment of his assigned task. These assignments are rotary. Moreover, it is demanded and expected by the head of the service that whatever treatment is rendered must be thorough and complete; and whether two or thirty patients are treated, each assignment in the division of work must be efficiently carried out.

CARE OF PATIENTS' MOUTHS.

Care of the mouths of the patients in the hospital is a regular part of the service. Each patient upon admission is immediately examined by the interne and his diagnosis is reported to the attending dental surgeon on service. Patients requiring immediate dental or oral surgery are, with the consent and direction of the attending dental surgeon upon whose service the patient is admitted to the hospital, temporarily transferred (except when admitted on our service) to the oral surgery service. Ambulatory patients are then referred to the clinic, while those bedridden are operated on in the hospital. The patient is then returned to the service upon which he entered and follow-up work is done by co-operation.

OUT-PATIENT CLINIC.

In the out-patient clinic each applicant for service is received by the interne who records all preliminary data and obtains an operating consent. The patient is then placed in charge of the doctor whose assignment for the day is diagnosis. The first step then is a thorough examination of the mouth, which is immediately recorded. The most important work, or rather that requiring immediate attention, is especially noted on the chart, and the patient is then transferred to the anæsthetist. Before the latter proceeds with his work, he rechecks the diagnosis and then administers the anæsthetic. This is also recorded on the chart and the patient is now taken to the operating room. Here the anæsthesia is tested and the patient operated on and the operation recorded. Thus every step is entered on the chart.

During the year 1925, 1963 patients were treated by the out-patient dental department. The routine work involved every phase of dental and oral surgery, viz.:—extractions, impactions, root amputations, transalveolotomies, alveolectomies, prophylaxis, treatment of periodontoclasia, cysts, tumors, fractures, incisions for drainage, antrum operations, removal of needles, cases of osteomyelitis, cases of sequestrotomy, exploratory examinations and problems of hemorrhage. Part of the service in the out-patient clinic when indicated, consists of hæmanalysis, blood coagulations, blood pressure, and urinalysis which is the work of the interne. The x-ray and pathological laboratories are available at the service of the clinic.

CONFERENCES.

A very important feature of the dental service is its monthly conference. The entire staff properly organized and known as the "Greenpoint Hospital Dental Staff," meets regularly, discusses the various problems of the preceding month and advises new and constructive measures for the benefit of the clinic. At the collation which follows, there is usually an informal "round table" talk and discussion of dental and oral surgery problems in general. The value of such conferences is evident, for it not only helps the men on the service, but the general understanding of a case under treatment benefits the patient. In addition to this part of the programme, prominent professional men are occasionally invited to address the staff on kindred subjects and these are discussed freely.

Non-visitor conferences are marked by the reading of a paper by one of the men on the staff who has been previously assigned to that task by the chairman. These papers, as also all questions, are discussed by the chief of our service who always attends the conferences and whose comment and advice have proven of inestimable help to

the men, not only in pursuit of their work in the hospital, but also in the conduct of their private practices.

Visitors to the hospital are always welcome on clinic days, or on other occasions when major operations are scheduled. The latter are usually announced in the daily Bulletin of the Academy of Medicine in Manhattan.

Patients referred by dentists are cared for and the courtesy of report to the dentist is observed. Where the work is of unusual nature calling for discussion at conference, the dentist who referred such patient is invited to take part in the discussion.

Courtesy, painstaking care, efficient team-work and *esprit de corps* are the constant admonitions of the chief of our service and the observance of these is manifest in the results obtained.—*Dental Items of Interest.*

Gold Foil Filling for Restoring Tooth Form



COHESIVE gold foil is the king of filling materials, and with it the very valuable teeth forms may be wonderfully well reproduced. In the restoration of the normal occlusal forms the material works most beautifully. The grooves, pits, incline planes and cusps are easily reproduced with small pellets, using the various plugger points as the operation is built up and finished. No more beautiful forms are possible in inlays or amalgam than may be made with this unique filling material. The other surfaces, so vital to physiological function, are likewise as easily and positively reproduced.

It is not the purpose of the writer to condemn the porcelain or gold inlay. Both the direct and indirect methods hold many possibilities. We should dislike to part with them in our practice. We are not in any sense condemning the use of amalgam. We consider it a valuable filling material, and would not want to practise without it. This is what we do wish to emphasize: That gold foil is not a "lost art," but when properly understood will rapidly come to its own. Already the disgraceful results of easy slipshod methods are becoming apparent. Interest everywhere is becoming aroused for safer, saner and surer methods. Cohesive gold foil offers a surer and safer method in a wide range of cavities. Goldfoil technique should be thoroughly mastered in our colleges, demonstrated in our societies, taught in our study clubs, and more generally employed in our offices.

—J. M. Prime, Minneapolis *District Dental Journal.*

Principles and Technique of the Removal of Teeth

BY ADOLPH BERGER, D.D.S., NEW YORK CITY.

FRACTURING OF TEETH.



THE tradition that a tooth must be removed intact generally prevails in the minds of most lay people, and also in that of numerous professional men, so that fracturing a tooth during its removal is always looked upon as the result of faulty operation and almost a disgraceful accident. Even the man who is accustomed to remove teeth is not, as a rule, free from chagrin when a tooth fractures unexpectedly. Although in no department of surgery is one hundred per cent. of success expected, still this erroneous notion is so deeply rooted, that many a reputation is either made or blighted by the successful or unsuccessful removal of teeth.

Undoubtedly, many teeth are fractured because of faulty manipulation, carelessness, or because of lack of dexterity on the part of the operator; still the censure which this accident begets is not always warranted. The exclamation of the patient, "Doctor, did you break it?" is always so charged with reproach and innuendo that it requires considerable moral courage to face the situation with a free admission.

There are numerous conditions, however, which conduce to the fracturing of the tooth in its removal and which are entirely beyond the control of the operator. We may definitely state in this connection that the man who never breaks a tooth is one who never removes any. By being frank and stating that some teeth will break in their removal, despite all care and dexterity, we may be able to remove the stigma which appears to have grown to be inseparably attached to this occurrence.

That some teeth become fractured while being removed, because of existing conditions, which are entirely beyond the control and may or may not be predetermined by the operator, we must admit. The practice of leaving such broken off portions of teeth in the jaws of unsuspecting patients is folly, however, and almost invariably leads to later complications. It should be the duty of every one who practises the removal of teeth to inspect the roots of every tooth removed, and not until the apex or the apices are out can the tooth be considered to have been extracted. If a portion of the root remains in the alveolus, this should be removed at once, whenever conditions permit. If the operator feels that he is incapable to cope with the case, it should be his duty to inform the patient of the presence of a portion of the tooth, and

to advise its removal because it is a potential cause for later complications.

The notion that broken portions of teeth become absorbed, or exfoliated, is earnestly believed and seriously stated by some men. The conception is based, principally upon the observation that, after a lapse of time, a deeply buried broken down root becomes visible above the gum surface. Experience does not bear out this notion and what really happens is that, with the shrinkage and absorption of the surrounding alveolar process and gum tissues the root becomes exposed.

Unlike a piece of necrosed bone, a broken portion of a root may remain in the alveolus for any number of years, without being destroyed, or affected by osteoclasts. In some instances it may become completely enclosed by bone. In a small number of cases destruction of a root is observed especially in the presence of chronic infection. In a comparatively very small percentage of cases a portion of root may become completely exfoliated through the pathological destruction of the surrounding tissues engendered by the infection present.

Broken roots, when left in the alveolus may exert a baneful influence in at least three different ways. First, they must always be considered aseptic, or infected bodies, even if fractured from a vital tooth in its removal. With the fracture of the pulp that organ is almost sure to die and infection must follow. It is good judgment, therefore, to consider broken apices as possible foci of infection, regardless of the absence or presence of demonstratable pathological lesions. Second, broken root ends frequently give rise to acute alveolar abscesses, which may follow very soon after the removal of the tooth. In numerous instances they are the direct cause of chronic degenerations, such as chronic or subacute abscess, the pus discharging through the tooth socket, or through one or more sinuses in its vicinity, or at a more distant point, which will continue until the root is removed. Other pathological conditions noted are suppurative osteitis, granulomas and cysts. These may cause considerable tissue destruction, so that contiguous structures become involved as a result. Third, broken root ends are frequently the cause of severe and lasting facial neuralgias which are not always localized and which may terminate with the removal of the root or may persist long after. These cases are not always characterized by pathological degeneration of the surrounding tissues. Neuralgic symptoms are especially prone to develop, when a prosthetic restoration is placed over an area containing a root. The pain may be so severe that it may simulate even major neuralgia, especially in those cases where the portion of the root becomes completely enclosed in bone. The pain is analogous to that caused by an impacted tooth in which there is no palpable inflammatory condition present,

As fracturing a root is one of the very common complications in the removal of teeth, it may be of interest to inquire into the causes thereof. These are numerous and may be placed under several headings.

1. PATHOLOGICAL CONDITIONS AFFECTING THE TOOTH.

The most frequent direct cause for the removal of teeth is caries. Because of the ravages of this disease many teeth become broken down, or hollowed out, so that what remains of the crown and neck portion of the tooth is not sufficiently strong in bulk, or texture, to withstand the stress of the application of forceps, or the leverage required for its dislodgment from the alveolus. In some instances, the tooth substance proper is altered by the agencies of infection, or by drugs formerly employed as therapeutic measures, and it becomes exceedingly brittle so that fracture is inevitable under the ordinary measures of tooth removal.

Under this heading may be included also, those teeth which are considerably weakened through being reamed out for the reception of dowel, or cast base crowns, and other restorations of a similar nature.

In all of these cases the tooth and surrounding tissues should be closely examined, before its removal is proceeded with, and all facilities should be ready at hand to meet all emergencies which may arise. It is often a wise precaution to employ at once those measures which may be necessary for the removal of the broken down root, thereby anticipating fracture and other complications. For example, when an upper first or second molar is badly broken down the roots may be separated with root or excising forceps and each root may be extracted individually. At times it may be expedient to surgically cut away a portion of the alveolar plate to facilitate the removal of the tooth and to prevent fracture. Such measures are often practical expedients as the removal of a small and deeply lodged fragment may become a prolonged and tedious operation.

2. ANATOMICAL FORMATIONS.

The roots of some teeth may be so curved, or frail, that the direction and the degree of forces ordinarily applied for their removal result in fracture. This is especially true of multirooted lower third molars, although the roots of many of these are fused into one. The roots of these teeth are quite frequently curved and frail and, being embedded in the most compact portion of bone in which teeth are lodged, they have a great tendency to break.

The upper first bicuspid is probably only second in this. While the bone is more cancellous at this point, the bifurcated roots are so tapering and frail, that they frequently fracture, even when considerable care is exercised.

The upper third molars, like the lower ones, vary in their formation, and in the number of their roots. The bone here is rather cancellous and yielding and when good technique is used fractures are not quite so common. The distobuccal root of the upper first molar is next in sequence of frail roots. Owing to this, and because of the marked divergence of the roots, this also has a great tendency to fracture. While the lower and upper anterior teeth when intact do not break very frequently, exceptions to this are the curved roots of the upper cuspids and lateral incisors, and those which contain dowel teeth. The lower bicuspid fracture more frequently through faulty manipulation, than because of their anatomical formations.

The anomaly of an unusual number of roots is quite frequently the cause for their fracture. Of these, the most frequent ones are the many rooted lower, or upper third molars, the three rooted bicuspid, and three rooted lower first molars. These are not very common, and other abnormalities in this respect are even more rare.

It may be appropriate to class, under this heading, the teeth affected with hypercementosis, cementomas, or small or larger odontomas and geminate teeth. When these are lodged in the upper jaw they may be removed with no more difficulty than a tooth which is not so affected. In the lower jaw, notably, when lower bicuspid and molars present even small bulky formations at their root ends, their removal may offer considerable difficulties. Whenever these conditions are discovered before the removal of the tooth is undertaken, it is more advisable to dissect these teeth out, by relieving or removing the external alveolar plate of bone first.

3. THE NATURE OF THE ENVELOPING OSSEOUS STRUCTURES.

This may be briefly summed up with the consideration of texture and the bulk of the bone into which the tooth is embedded.

The roots of *normally erupted* teeth are embedded into and closely enveloped by osseous tissue, and it is the retentive force of this structure that must be overcome in their removal. When the alveolar process is unyielding and the resistance is greater than the breaking point of the root, fracture must necessarily occur. These factors may vary considerably even under normal conditions.

Difficulties from this source are most common in the lower molar and bicuspid regions. In the lower molar region the bone is compact and contains only a scant amount of yielding cancellous tissue into which the roots of these teeth are imbedded. The bone proper is increased in thickness as we pass from before backward, by the external, and internal oblique ridges, which blend into the alveolar surfaces on the respective sides. In the case of bicuspid, the roots are of consider-

able length, the bone is quite firm and because of the disproportionate leverage, they break under the strain of the extraction movements. In the upper jaw difficulties through this cause are not so common, though modifications in bulk and structure are encountered here also from time to time.

4. POSITION OF THE TEETH.

Malposition of fully erupted teeth always conduces to their being fractured in their removal. This is especially noted in the case of lower bicuspid when in torso-occlusion, i.e., the mesial and distal sides of the tooth are in buccolingual relationship. The roots of these teeth are flattened *mesiodistally* and the leverage exerted often causes their fracture. In a general way it may be said that all malposed teeth should be removed with considerable care, to prevent fracture.

FAULTY TECHNIQUE.

Under this heading we class several related factors; failing in the thorough examination of the tooth to be removed and of the surrounding structure; the improper selection of instruments; the improper use of instruments; poor judgment in the selection of anæsthetic; improper posture of the operator or the patient, etc.

As one of the more outstanding failings, mention may be made of the improper application of the forceps. In the proper conduct of the removal of teeth, it is essential that the forceps should be so applied that the beaks are parallel with the long axis of the tooth. When this is done and the forceps are closely clamped upon the tooth, the tooth and the forceps should form one rigid mass. When the tooth is grasped diagonally, the portion thus grasped must break off because of the manner of the force applied. Another equally common faulty manipulation, is when the beaks are inserted in such a manner that the tooth is grasped at two different levels. For example, the beak upon the labial or buccal aspect may be well below the gum margin, whereas the one upon the lingual aspect is applied to the middle part of the crown of the tooth. In this manner the forceps are permitted to ride upon the crown of the tooth until it breaks off.

POOR JUDGMENT IN THE SELECTION OF INSTRUMENTS.

This factor can be considered with propriety under the heading of poor technique and permits of some degree of elaboration. At the present time there are so many various forceps, elevators, chisels and other instruments designed for the removal of teeth that their number and variety are bewildering. The tendency, especially with the novice, is to buy many more instruments than is necessary. Many of these are purchased, they have their day of trial and are soon discarded, or

relegated to the shelf. The experienced operator usually confines himself to the use of a very few instruments. Greater dexterity can be attained by the proficient use of a few instruments.

In practice, the selection of the instruments should always be based upon the anatomical formation, and the condition of the tooth, or root, to be removed, and with a view to causing the least amount of damage to surrounding tissues. For example, the broken down upper or lower molars are more easily grasped with root forceps than with full crown forceps. The badly broken down upper molar roots are more safely and more expeditiously removed with the root forceps and when elevators are used, the root may be forced into the maxillary sinus. On the other hand, the lower molar roots, especially when broken down beyond the margin of the compact alveolus, can be more easily removed with elevators, hand chisels, or at times, with chisel and mallet.

RADIOGRAPHS.

When a tooth breaks, the question frequently arises whether the retained fragment should be removed at once, or should further operation be deferred for another occasion. The best policy is to remove it at the same sitting. This is especially indicated in the presence of pericementitis or in the early stage of abscess formation. If the apical portion is left in place, this may act as a septic irritant, to the same degree as the entire tooth would. It is also more advantageous to remove it at the same time, as there is nothing to be gained by subjecting the patient to a second anæsthesia and a second operation. Secondary infections and much suffering may be avoided when the root is immediately removed.

There are some conditions, however, in which deferring this for another time may be permissible. Of the more common instances we may mention the following: when a tooth breaks under the administration of a general anæsthetic, such as nitrous oxid and oxygen, and the operator feels that a cleaner and, from the patient's standpoint, a more advantageous operation can be performed under a local anæsthetic; in the presence of an acute abscess when the root cannot be removed without invading the healthy bone; when a patient becomes unmanageable under a general anæsthetic and it does not seem advisable to proceed with a local anæsthetic; when the operation becomes so prolonged that the patient becomes hysterical, or the general state forbids continuing with the operation. It is also good judgment to stop when the operator feels that the case is more difficult than he had anticipated and that it would be more advisable to refer the patient to a specialist in this field.—*Dental Items of Interest.*

The Place of Dentistry in Preventive Medicine

DUNSTAN BREWER.

Medical Officer of Health and School Medical Officer, Borough of Swindon.



THE separation of the dental from the medical profession, whatever may be said in its favour, had, for many generations, prevented the practitioners of both professions from fully appreciating the dental apparatus as an integral part of the body and that its condition must react upon the organism as a whole. Since the middle of the nineteenth century it has become not unusual for dentists to take a medical as well as a dental training and, somewhat more rarely, for surgeons to qualify in dentistry. These, seeing clearly the interaction of the teeth with the rest of the body, laid the foundation of the modern training of dentists and opened the way for the consideration of dental disease in conformity with general pathology.

It was only natural that after being so long divorced, the first result of union should be exaggeration, and that we should pass through a stage when the physician would ascribe all that puzzled him to dental causes and the dentist claim the disorders of the teeth as the prime cause of most human diseases. We have passed that stage. The rapid increase in our knowledge, due to the research and observation of the past fifty years, allows us now to discuss the position of dental disease in general pathology with some accuracy and to estimate the scientific relationship of the dentist with the physician.

Discussion on the influence of systemic disease upon the teeth is in the province of the dentists; that on the value of dentistry in the treatment of disease which is believed to be due to dental causes in the province of the practitioners of curative medicine. These questions have been discussed, and most ably discussed, by those qualified to deal with them and do not fall within the scope of this paper. It is the advance which has taken place recently in preventive medicine which is the excuse of the writer for troubling you. What can be got from the dentist to help in preventing disease or, where this is not possible, in preventing the early departure from physiological process—which is the beginning of disease—progressing to pathological conditions to which names can be given, which can be diagnosed, which are what we call diseases—which are end-products?

The direct and obvious results of dental disease upon the general condition need not detain us. Such matters as dental abscesses, the

connection of bad teeth and neuralgia, indigestion due to bolting food caused by painful or deficient teeth and the more doubtful, but probably genuine, infections of the gastro-intestinal tract due to continuously swallowing parasite organisms and their products, are well worn, but by no means threadbare, subjects for argument. But their influence upon the prevention of disease, great as it is, is fully recognized. There are, however, aspects of the influence of dental disease on the body generally which, though probably of greater consequence than any of these, are less known and have not received nearly as much attention as they deserve. It is proposed to touch upon these; or rather four of them—the connection of the teeth with the genesis of chronic systemic disease; with the lymphatic apparatus; with the problems presented by acute infections; and diseased teeth as a source of nervous and mental irritation.

For some time it has been known that one of the causes of pernicious anæmia is poisoning by the toxins of hæmolytic streptococci, and that these organisms, though found occasionally in healthy mouths, are particularly frequent where the teeth are faulty, and especially when pyorrhœa is present. Where a socket is infected and the root tip is roughened by partial absorption or erosion, there will be a tendency to minute injuries to the soft tissues from slight impacts upon the affected tooth. These injuries open a path for the toxins of the organism direct into the blood-stream, and thus a continuous poisoning with minute doses of toxin is produced, which is credited with the production of pernicious anæmias. Dental treatment will occasionally cure pernicious anæmia by removing one of its prime causes, more frequently it will delay its progress, as the damage done is too profound for cure. Pernicious anæmia is an end-result from causes which have been acting for a long time. Can we recognize the causal dental factor early and, if so, can we put a stop to it and prevent the development of the disease? We can, but we must start early. Though pyorrhœa with a diseased socket and a roughened root tip is the best known means by which hæmolytic streptococcus toxin gets into the blood, any condition of the teeth which produces injury to the gums can act in the same way. In caries of the teeth in childhood this is common, and this is one reason why attention to the teeth of children is one of the first principles of preventive medicine. The process is as follows: Poisoning by the toxin produces hæmolysis; at first, merely increased rapidity of red corpuscle destruction. Should the dose not be severe, the patient healthy—above all if he be young—the loss of corpuscles is made good, health is unimpaired. Continuation of the cause, however, apparently throws a strain on the blood-producing apparatus, resulting in a condition in which the state of the blood varies alternately from one of low red corpuscle count with no eosinophiles to one of high red corpuscle count with ex

ness of eosinophiles, but health is still maintained. Later, the red corpuscles produced become more and more abnormal, and failure to make good the damage done causes the health to fail. In children and adolescents recovery will take place, provided the cause is removed, even when the blood-changes produced have become marked and of long standing; but as age creeps on, complete restoration of normality becomes less and less likely. The blood-changes described can be studied without much difficulty in late puberty and early adolescence. In young children it is more difficult and uncertain, for the blood states in early life are extraordinarily complicated and variable. This is the first way that disease of the teeth reacts on the general condition to its detriment, laying down one casual factor of future disease.

There is a second, dependent upon the influence of teeth diseases upon the lymphatic apparatus. The lymphatic system in childhood is of great activity and importance. Witness the great frequency of enlarged glands, adenoids, enlarged tonsils, appendicitis, &c., and the relative abundance of lymph-cells in the blood-stream, which in children are the most numerous of the cellular elements. Diseases of the teeth, producing chronic irritation of the lymph glands of the head and neck, tend to exaggerate the lymphatic-cells in the blood-stream, a condition associated with, if not the actual cause of, failure to react to infective processes. What our fathers called the "strumous" or "scrufulous" diathesis, associated with liability to die from trivial causes, or to become chronically diseased from causes which the healthy resist with success.

On a superficial view, acute infections appear to arise suddenly from causes which have recently come into action. An attack of pneumonia, for instance, which starts abruptly in a man who but a few hours before was apparently healthy, certainly suggests that the cause of the disease should be looked for in something immediately preceding the rigor. The practitioner of preventive medicine cannot admit this. That one of the prime causes of the disease is of recent origin he does admit, and he admits that the disease could not have occurred without it. But he insists that the recent causal factor could not have done what it did do had not the body been caught in an unfavourable position, due to antecedent causes which are remote and which may have been operating for months or years. Some of these causes are of dental origin. Let us consider them in connection with three acute infections—scarlet fever, puerperal septicaemia and pneumonia.

Scarlet fever is a throat disease; the organism, or at all events its toxins, gains entrance to the body through the throat; the throat is one of the parts of the body upon which the stress of the disease falls. Foul throat, foul mouth, foul teeth, inhibit the throat tissues from reacting favourably. It is doubtful if the incidence of scarlet fever is influ-

enced by the condition of the throat; it is certain that the amount of damage done to the throat by the disease and the powers of the throat to put forth its full activity in reacting against the disease are greatly influenced by the previous health or otherwise of its tissues. Here we see a remote result of dental disease, for this damages the tissues of the throat which in great part belong to the lymphatic system; unnecessary damage; possibly a fatal result, which would not have occurred had the mouth been clean. But the main stress of scarlet fever falls upon the blood apparatus. We have seen how this is damaged by dental disease.

It is doubtful if pneumonia is more frequent in those with unsound than in those with sound teeth, but it certainly is more fatal. This, in the past, has been explained on the presumption that a foul mouth will tend to produce a mixed infection of the lungs, causing them to suffer from other organisms besides the pneumococcus. Our knowledge of pneumonia forces us to repudiate this. In the majority of cases the only organism present in the lung in pneumonia is the pneumococcus. The modern method of "lung juice examination" proves this. From the pneumonic lung the pneumococcus can, in the vast majority of cases, be grown pure. Besides, the condition of the lung has little bearing upon the prognosis in pneumonia. But the condition of the blood apparatus is of paramount importance. The outlook in pneumonia depends chiefly upon the ease with which an abundant supply of fully formed leucocytes can be manufactured. Dental disease interferes with this through hæmolysis and lymphatic irritation, both of which inhibit the production of healthy leucocytes.

Puerperal septicæmia is most frequently due to infection of the uterus with a hæmolytic streptococcus. We have seen that a hæmolytic streptococcus is common in the mouth; how its toxins for certain, and the organism itself in all probability, can be forced into the blood-stream. It is therefore not unlikely that these organisms can be conveyed through the blood-stream to the uterus, where everything is favourable for their rapid development, causing puerperal fever in women whose delivery had been normal and where no interference has taken place. It is possible also that direct infection might take place through the genital canal; but for reasons which need not be discussed here, the author considers this to be improbable. But here again, the prognosis of puerperal streptococcal infection depends upon the blood-reaction and the influence of that reaction upon serum therapy—so dental disease may be the remote cause of a fatal result in puerperal infection, even though it has nothing to do with the infection itself.

The part played by the teeth in irritating the nervous mechanism and so helping in the production of neuroses is important, and though doubtless it has been exaggerated (because in neuroses we are always

looking for scapegoats), the study of the neuroses of children furnishes unimpeachable evidence that is often genuine. Nor is this surprising, for the mouth is highly sensitive and its innervation connects it intimately with the sympathetic and parasympathetic systems. Even normal physiological development of teeth may cause some nervous manifestation, so it is easy to see how disease might, in individuals otherwise tuned to them, produce complex mental and nervous phenomena. That "fits," asthma, a condition resembling Ménière's disease, cyclic vomiting, &c., in children are sometimes in part caused by bad teeth, is proved by these conditions occasionally becoming "cured" after dental treatment.

There is a connection between caries of the teeth and myopia and a more obvious connection between extensive caries and the retinal changes which often supervene in progressive myopia. What this connection is we cannot say; it may be connected with the variations of blood-pressure which result from intermittent hæmolysis, or it may be a toxæmic reaction.

In the matters which we have touched upon, it will be seen that the influence of the state of the teeth is remote and only one of many factors which combine to produce disease. This is always so. There is no systemic disease dependent solely upon the condition of the teeth. Thus there is no disease—apart from that of the dental apparatus itself—which is not met with in those whose teeth are sound, diseased, present or absent; nor can we ever say that because the teeth are diseased, systemic disease must follow. But that dental disease is a potent and frequent contributing factor of many other affections, and that it influences for evil nearly all pathological states, however caused, admits of no question. And is there any cause of any disease—apart from direct poisoning and violence—of which more can be said?

The medical preventist will therefore lean on the dentist pretty heavily. At present he is mainly concerned with children, and it is in school inspection, child welfare and ante-natal work, that the physician and dentist will be in closest touch. In school inspection, especially, the first call of the inspector will be upon the dentist. Not perhaps because dental disease is the most important matter met with, but because it is the most obvious and the easiest to remedy. Acting upon the principle that when a difficult passage has to be negotiated the first thing to do is to remove from the path all obvious and readily-shifted obstructions, the first point in guarding the child against disease is to see that his teeth are made dentally fit. The same applies in ante-natal work and also to infant welfare work, except that here a few of the patients have advanced to the dignity of tooth possession. Their

"teething" troubles have little or nothing to do with the teeth. But almost as soon as they get teeth they require the supervision of the dentist.

The influence of dental disease upon the lymphatic structures of the throat and neck suggests that in dealing with abnormal conditions of those organs dentistry is the first element in treatment. In regard to the lymph-glands themselves, this is universally accepted, and whether a tubercle is suspected of or not the physician insists upon the mouth being rendered dentally fit before considering further action. In tonsils and adenoids this is not generally done, yet the same principle applies, and it is rational to insist upon dental fitness as the first step in treatment—very often it will prove all that is necessary in the way of surgical interference. The same applies to ear disease in children, though here we are on less certain ground. Ear discharge is commonly ascribed to spreading infection from diseased teeth and, not infrequently, to the irritation produced by eruption of the temporary molars; the former, though probable, is not proven, the latter is false.

In the nutritional disorders of children, dental fitness is always the first aim, a foul or painful condition of the masticatory apparatus being often a cause and always a complication of those conditions; but the influence of dental disease upon the blood is probably of even more importance than the more direct action.

In short, the first step in preventive work in children is competent and complete dental treatment.

The preventive physician, recognizing the profound influence for bad exercised by dental diseases, is naturally very gravely concerned with the prevention of dental diseases themselves. Here he must apply to the dentists to supply him with knowledge, and here it must be stated regretfully that he is dissatisfied. That the causes of disease of the teeth should be very imperfectly known even to dentists may cause disappointment but not dissatisfaction. Anybody who takes up preventive medicine seriously is profoundly skeptical in regard to "causes"—he has been cheated so often that he has learned to look with a searching and highly critical eye upon everything that is passed over to him. What will satisfy a patient will not be acceptable to the preventist. It is useless to call "age," dentition or the east wind causes of disease—for the two former are physiological phenomena common to all and the last blows upon all of us without distinction. The list of causes of dental disease—of caries especially—consists mainly of factors of this description, and the dentists would render a great service to preventive medicine if they would re-edit their ætiology and, discarding what is mythical, let us have what is really relevant. A grain of gold is worth a carload of sand—and the grain is of greater value if it is freed as far as possible from adhering dross.

The position of the dentist in the work of preventive medicine is assured, but the precise nature of his functions is not yet assessed. So far he has been used mainly, if not exclusively, for curative work, but it is obvious that his final position must be mainly as a preventist. It may be that he will require special training for the work just as medical officers have to be specially trained. At present the inducements to dentists to enter the public health services are not very alluring, the pay is poor and the prospects of advancement remote. This is unfortunate, for it necessarily results in dentists taking up public health work, especially school work, as a preliminary to practice. It attracts the newly-qualified man, who sees in it the chance of getting experience whilst he is looking about for a more remunerative job. But preventive work of all kinds requires the highest and most experienced minds to appreciate its possibilities and difficulties, and we shall never progress unless such minds are attracted to it.—*British Journal of Dental Science.*

Annual Registration in Great Britain £5



THE annual Registration Fee for Dental Licensure in Great Britain is £5. The Fee is called an Annual Retention Fee, because the practitioner's name is retained on the Register only when the fee is paid.

The yearly income of the Dental Board is approximately £51,000, £48,000 arising from fees and £3,000 from interest on reserves and sale of publications.

The annual expenditures are: For general expenses and administration, £12,000; Dental Research, £5,000; Dental Health Education, £4,000; Post Graduate Lectures, £1,500; Student Bursaries to assist students who would otherwise be unable to proceed with their studies, £21,000. It has been suggested that the balance be turned over to a special fund for assistance to Dental Schools, the Board's grant to any school being contingent upon certain expenditures by the school itself. At the end of the current year it is estimated that the Dental Schools' account will approximate £20,000.

The statement has been made that within a few months the public requirement for dental services will be materially increased owing to the provision of dental benefit under the National Health Insurance scheme. It is quite probable that £2,000,000 a year will be available for dental benefit, the membership of the societies offering it being well over ten millions. Some of those who have given consideration to the whole problem fear that the extra demand for dental service arising through Health Insurance will be greater than those on the register

can possibly supply and this in part is the justification for large expenditures for bursaries for dental students.

Upon the basis of one dentist to 3,000 of population there would be required 16,000 dentists on the register, with 800 names added annually. At present there are 14,000 names on the register. Some members of the Dental Board fear that unless the Board prepares to meet the situation, it may later be charged that the Licensing Board in Great Britain has created a monopoly of dental practice and a demand made for lower standards of qualification. It is on these grounds that some are urging the maintenance of the present registration fee that the programme of the Board may be well sustained.

The British Dental Association has for some time been protesting against the amount of the fee and urging that it inflicted real hardship on many of the younger licentiates. The Association recently addressed a communication to the Board suggesting that for five years after graduation the annual Retention Fee be one-half the ordinary fee. Others suggest that the fee be reduced from £5 to £4. The number of practitioners who paid the Retention Fee this year was 9,288.

At the recent opening of the Tenth Session of the Dental Board in Great Britain the many problems of dental registration and organization were ably discussed by the Chairman of the Board, the Right Hon. Francis Dyke Acland. Those desiring more complete information may read the Chairman's address in full as published in the British Dental Journal.

Dead Teeth

 HIS unfortunate term has been accountable for the loss of many useful teeth. It is the fault of the dental profession that it was ever employed, and it should be the duty of the profession to see that it is eliminated. Medical men, not familiar with dental structures, naturally accepted the term at its face value, and it was accordingly logical for them to order such teeth to be extracted. No physician with any judgment would want anything "dead" left in his patient's mouth, and if a pulpless tooth were really a dead tooth there would be no tenable argument in favour of its retention. But a tooth with a good pericemental membrane surrounding the root and attaching it to the alveolar process is by no means a dead tooth. To-day, physicians quite commonly speak of "dead teeth" when they mean pulpless teeth, and the distinction between the two should be shown them by every available means.

Even without the histologic evidence, which is incontrovertible, the

fact that these teeth frequently remain in the mouth for many years without being exfoliated is conclusive proof that they are not dead. A tissue that is dead will not be tolerated for any length of time by the system.

The harm that has been done by the use of this term can never be estimated. Patients, when told that they have dead teeth, are quite likely to begin to feel uncomfortable at once, and the fact that at least some of our ailments have a psychologic basis lends itself conveniently to the general mental demoralisation which assails certain people under such circumstances. The term pulpless teeth is not only more accurate histologically, but also much less terrifying to the patient. Medical men are usually genuinely anxious to serve their patients in the most efficient way, and if they have been led astray by dentists in the use of this unfortunate term, it is high time that dentists do their share in correcting the error, and showing their medical brothers its fallacy.—*Journal of American Dental Association.*

Deciduous Teeth and Nephritis



REPORT is made in *The International Journal of Orthodontia*, April, 1926, issue, of a case of somewhat unusual interest for dentists. This report is in the nature of an abstract of a paper published by P. Gadd in the

Zahnaerztliche Rundschau, February, 1926. The description of the case is about as follows: A girl sixteen years of age presented a fever, but without any apparent symptoms. Having no desire for food, she soon became very emaciated, and was finally sent to a sanitarium for special treatment. Upon examination of the teeth several common defects were observed, and two deciduous molars were still in place. The extraction of one of these molars was decided upon. Pus escaped from the sockets and the patient's temperature soon began to fall. Soon afterwards, however, an infectious nephritis developed, due to the presence in the blood of the bacillus coli. As the fever returned, the remaining deciduous molar was extracted, and again a few drops of pus escaped. In this case the roots had been absorbed and a granuloma was present. Again there was a lowering of the patient's temperature, followed shortly after by a clearing up of the urine. In the author's opinion the infection of the kidneys was traceable to the deciduous teeth.

All religion and all ethics are summed up in justice.—*Conway.*

Are You Exempt ?

“HAT physician likes to be called ‘Doc’?” Answer from a loud and ever-swelling chorus, “NOBODY!” How many medical men are called “Doc”? Answer—*sotto voce*—“all of them.”

The late Dr. Phineas S. Conner, of Cincinnati, was wont to tell his students that “When a man first calls you ‘Doc,’ or mispronounces your

DON'T CALL ME “DOC”!

I am a Doctor of Medicine. My title is DOCTOR.

The word doctor means a teacher—a learned man—one schooled in a learned profession.

The degree of Doctor is the highest given by any university, and indicates that its owner is to be classed with the most highly educated men.

Any man should be proud to possess this degree and to be designated “DOCTOR,” but no self-respecting professional man desires to be called “Doc,” which is a despicable mutilation of a most honourable title.

No other title is similarly abused. Does one ever hear the possessors of these titles called by an abbreviation—Pres(ident), Gov(ernor), Sen(ator), Cong(ressman), Gen(eral), Col(onel), Rev(erend)?

Cultured people never address a physician as “Doc,” and other people should not do it.

No man is harmed by being so addressed, but when a person calls a physician “Doc,” the doctor’s opinion of him is lowered. When a physician is addressed as “Doctor,” he recognizes the speaker as a person of superior intelligence who respects himself, and honours the profession.

Please drop “Doc” and cultivate DOCTOR.

name, reprove him gently. When he repeats the offence, reprove him profanely. When he does it a third time, knock him down.”

A physician in Minnesota has suggested the utilization of a dignified protest against the employment of this appellation, which he would have printed rather nicely on a card in sizable type, so that it might be framed and hung in the office. This suggestion is presented herewith in a panel.—*Medical Pocket Quarterly*.

Dentists' Legal Protective Association

HAROLD CLARK, D.D.S., TORONTO.

N presenting my report for the Dental Protective Association during the past year I wish first to note the great loss suffered by the association in the death of its late president, Dr. R. G. MacLaughlin. It will be impossible for me to adequately take up and carry on the work he did for the association up to the time of his passing. However, with the aid of an excellent committee, I think I can assure the association that every endeavour will be made to carry on as efficiently as possible.

The work of the Association during the past year has been most gratifying. Our young profession has an object before it of vital importance that our Association will do much to achieve. In the older medical and surgical professions it is now pretty well established in law that when the practitioner in the care of his patient has taken all reasonable precautions the law does not make him responsible for any unexpected or untoward result. In short, it recognizes that it would be unreasonable to expect of him the superhuman. This commonsense view of the dentist's responsibility is far from being so well established. The unreasonable and the unscrupulous patient, with the suggestion and the aid of an unprincipled lawyer, still believes that if any service by the dentist doesn't please him he can use the law to mulct him of a tempting sum. Every case of this kind that reaches the court and is decided in the dentist's favour helps to build up a precedent, makes the success of subsequent litigation more certain, and robs the unscrupulous patient of his temptation. It is, therefore, in the interest of all of us to have all such cases that must go to court handled by counsel of outstanding ability and well known reputation. Already many have been deterred from risking the gamble of a court action against a dentist when it is learned that the case is to be strongly defended.

Where the dentist is plainly at fault it is the policy of the Association to advise him not to let his case be taken to court, but to make the best possible settlement, and to give him all possible help in that direction.

In Dr. MacLaughlin's report of May, 1925, he stated that during the previous year some twenty cases of a more or less serious nature were referred to the executive for assistance. Only three cases went to court. Two of them we won. The third, over which we did not have control from the beginning, was lost.

This year we are pleased to report that only three or four cases have been referred to us. The last is pending, but will in all probability be settled without court action.

*Report presented at Ontario Dental Association, May, 1926.

It surely must be obvious to every practitioner of dentistry in the Province, that the membership of the Association should include every man in active practice. Dr. Willmott will present his report on the membership and finances of the Association, and while conditions are most encouraging and gratifying, there are still many men who have not yet become members.

DR. F. C. HUSBAND:—In connection with this report, I would like to say that the success of this organization depends upon its membership and every member of the Dental Profession should be a member of this Association. My remarks are based largely on the closing words of Dr. Clark's report. Every practitioner should be a member of this organization, as it is here to support the dentist and it should also receive his support. I think that when a man is about to have a law suit he should receive the benefits of this organization, but this cannot be arranged unless he becomes a member. If you make it a point that if the dentist should get in difficulties the organization will give its moral support, but will not provide financial assistance unless he pays the required fee, it might have an effect upon increasing the membership.

DR. CLARK:—You take a man who has gotten into difficulty, it is a question which should be settled in favour of Dentistry. Unless the man has a good case it is best to settle out of Court. As this Association is a young organization there are many who know very little about it. I think they should investigate this organization. They should not wait until they are in trouble to become members. We have had little legal expense during the past year. But there are two cases which are not quite settled yet.

DR. W. E. WILLMOTT:—When the changes in the Dentistry Act were being considered by the Board, it was suggested to provide for the legal protection of the members of the Profession in Ontario, but Mr. Hellmuth advised against such a provision, but intimated that a section might be inserted giving the Board the right to make a grant to any organization which had for its aim the protection of its members. This was done and the Board may now make a grant to this Organization. It seems to me that by a slight increase in the annual registration fee collected by the Board, and by a grant to the Protective Association, every practitioner in Ontario might come under its protection. As a servant of the Board I do not wish to make such a motion, but some other member might so move.

DR. H. CLARK:—Under the old Act the Board would not be justified in making a grant to this Organization. The Board should increase the Licentiate Fee and make every Licentiate practising in Ontario a member of this Association.

DR. HUSBAND:—I understand by that, that you would abolish the \$3.00 fee in this Association.

DR. WILLMOTT:—Yes, and increase the Licentiate fee sufficiently to make every Licentiate a member of this organization.

Moved by Dr. Husband, seconded by Dr. Marshall:

"That the Board of Directors be asked to consider making some arrangement whereby every Licentiate in practice in Ontario should be included in the Dentists' Legal Protective Association."

PRESIDENT:—I think the idea is a very good one, but it should not be necessary to raise the fee to six dollars. All in favour of the Motion. Motion carried.

The following were re-elected as members of the Executive of the Dentists' Legal Protective Association:

Dr. Harold Clark
Dr. Wallace Seccombe
Dr. W. E. Willmott
Dr. A. D. A. Mason
Dr. R. Gordon McLean
Dr. W. G. Thompson
Dr. F. J. Conboy.

Dr. Willmott, Treasurer, presented the Financial statement for the year ending April 30th, 1926, as follows:

Receipts:—

Fees	\$2,115.00		
Grant Ont. Dental Ass'n.	500.00		
Bank interest	65.03	\$2,680.03	
Cash from last year		2,018.90	
			\$4,698.93

Expenditures:—

Printing and postage	\$ 78.13		
Committee expenses	14.70		
Office expenses	3.76		
Auditor's Fee	15.00		
Bank Exchange	2.95		
Honorarium to Treasurer	100.00		214.54

Cash on hand April 30th, 1926.... \$4,484.39

Signed,

THORNE, MULHOLLAND &c.,
Auditors.

Thomas B. Jones—An Appreciation

HEN the School of Dentistry of the R.C.D.S. became the Faculty of Dentistry of the University of Toronto, "Tom" Jones was appointed to the permanent staff as caretaker of the Dental Building. It was not many months, however, until his health failed him, and on his physician's advice he was compelled to take a complete rest.

The University of Toronto received numerous reports of "Tom's" condition, and in view of his many years of service treated him just

as though he had been an employee from the time he first served in the Dental Building, granting him a retiring allowance of \$600 per year.

The attitude of the University toward "Tom" Jones will be sincerely appreciated by all of the graduates of the R.C.D.S., who look upon "Tom" as an integral part of the old School.

Mr. Jones is in his sixty-eighth year, having been born in Milton, Ontario, on February 20th, 1859. His father was a cabinet maker and builder, and "Tom" followed in his footsteps. It was in such capacity that he first became connected with the School of Dentistry in 1894, when remodelling the old School at 13 Louisa Street, Toronto. Later, in 1896, when the School moved to the site now occupied by the General Hospital on College Street, he helped with the interior furnishings of the building.

And so it is that "Tom" has been associated with the doings of the R.C.D.S. since 1894, and was finding and returning lost rubber bowls and spatulas when the average one of us was in his 'teens.

When in 1909 the R.C.D.S. was moved to 240 College Street, he moved with it and had a share in helping in its finishing. After things settled down in the new location the first real opportunity for a well-earned holiday came across his path. The College granted leave of absence and "Tom" had the distinction and privilege of going overseas to the British Isles in 1910 with Sir Henry Pellatt's famous Canadian Regiment, the Q.O.R., as a bandsman in the Queen's Own Rifles Band, of which he had been a member for over twenty years.

Indeed, while it is inevitable that his Irish-Welsh parentage should give him a genial temperament, it is equally as natural that it should have an artistic bent, and we find that music means half his life to "Tom." He is considered the best Tuba player in the City, if not in Canada, and has been a member of the Philharmonic Society of Toronto for the last two decades; is a member of the Executive Board of the Toronto Musical Protective Association, of which body he was President during 1906-07; and has played with the Symphony Orchestra for twelve years. Some six years ago the Faculty of Dentistry had a splendid orchestra, "Tom" being actively connected with it.

He carries a wholesome interest in activities pertaining to human welfare, is a Mason of high standing, and a Shriner. Love of animals is one of his attributes, and the Toronto Humane Society has had him as an active member for over twenty-five years.

Graduates of the R.C.D.S. the world over will be pleased to know that the University has made generous provision for "Tom," and join in wishing him such return to health that he may live to enjoy many years to come.



PUBLIC HEALTH SERVICE

FOR THE PEOPLE ~ BY THE STATE

This Department is Edited by

FRED J. CONBOY, D.D.S.,

Director of Dental Services, Province of Ontario.



HE reports coming from many parts of the Province and describing the arrangements already made for the Ontario Dental Health Day to be held on Wednesday, October the twentieth, have been most encouraging. The dentists are all falling in line with the resolution passed at the Annual Convention of the Ontario Dental Association and approved by the Board of Directors which requests the men in every part of Ontario to provide free dental examination and advice for all those who request it on this day. At the proper time the Department of Health will broadcast a message to the people informing them that this service is available.

There are several other things which the members of the Profession can do. The Ontario Motion Picture Bureau has very kindly contributed two hundred and fifty reels of film presenting the programme for the prevention of dental diseases and the exchanges have offered to distribute these to the various theatres without charge. We are writing to the owners of the motion picture houses informing them that these films are available and requesting them to show these dental educational films on the 18th, 19th and 20th of October. It will greatly assist the Central Committee if the local dentists will interview the manager of the theatre in their community and ask him to secure this reel.

The Central Committee has been endeavouring to get in touch with all welfare associations and service clubs, but in order to carry the work through efficiently, each individual club should be approached by the local dentists. We have the promise of support from the provincial executives, but that will not be of great benefit unless it is carried into each part of the Province. The dentists in each locality should get in touch with the service clubs, and all other organizations, to make sure that they have received the message from headquarters and are preparing to assist.

Many meetings will be held during the next few months when

valuable advance publicity can be given to this effort. Every dentist should consider himself an organizer in his district and do his utmost to make the Dental Health Day a pronounced success. If in any part of Ontario this dental health effort is not a success, it will be because the local dentists or societies have not measured up to their opportunities.

John Hunter, Physician, Surgeon and Dentist

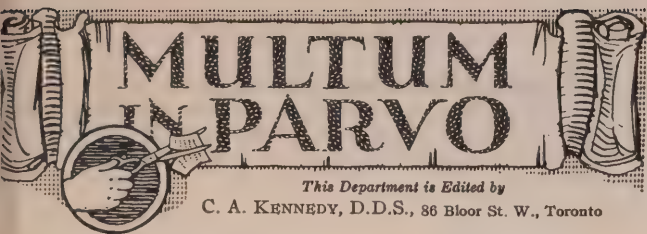


JOHN HUNTER, who lived from 1728-1793, and is frequently referred to as the Father of modern Medicine, was Surgeon Extraordinary to the King and Fellow of the Royal Society. He practised in London and took a keen interest in the teeth and their relation to bodily health.

Hunter was the author of two works on Dentistry, the one being that of "The Natural History of the Human Teeth" and the other "A Practical Treatise on the Diseases of the Teeth." These books, the one being a supplement to the other, were published in 1839 (just eighty-seven years ago) and clearly indicate the attitude toward Dentistry of the leading members of the Medical profession one hundred years ago. It was recognized that the teeth "require this attention not only for the preservation of themselves, as instruments useful to the body, but also on account of other parts with which they are connected; for diseases in the teeth are apt to produce diseases in the neighbouring parts, frequently of very serious consequences."

In the Introduction to one of Hunter's treatises the following appears: "One might at first imagine, that the diseases of the teeth must be very simple, and like those which take place everywhere else in the bony parts of our body; but experience shows the contrary. The teeth being singular in their structure, and some other circumstances, have diseases peculiar to themselves. These diseases, considered abstractly, are indeed very simple; but by the relations which the teeth bear to the body in general, and to the parts with which they are immediately connected they become extremely complicated." The author proceeded to explain that it was not his "present purpose to enumerate every disease capable of producing such symptoms as may lead us to suspect the teeth; for the jaws may be affected by almost every kind of disorder."

John Hunter's descriptions of the teeth and of dental disorders and their treatment may appear rather crude when compared with modern methods of scientific practice, but nevertheless they were in some cases remarkably accurate, and when the date of their publication is taken into account must be considered as worthy contributions to the development of dental science and practice.



GAGGING WITH UPPER DENTURE.—Usually persistent gagging with an upper plate is due to failure of the plate to make firm contact at the junction of the hard and soft palates. If it fails to make contact with the palate at all times and in all positions of the mouth and body, it seems occasionally in hypersensitive cases to result in the teasing or tickling of the nerve ending in the palate with a sensation of gagging. Be very careful with your post-damming and with the smoothness of the finish of the case at the posterior border, and then insist upon the patient wearing the plate day and night for a few days.

In case this does not remedy the difficulty, it might be possible to make a rim denture (with the palate entirely cut out) which will stay in place and serve satisfactorily. This can be done very nicely in some cases where the ridge is prominent and the relation between the upper and lower jaws favourable. For this purpose a modelling compound impression made following the same technique with which we secure definite retention on lower dentures should be used.

TO CLEAN THE HANDS.—Doubtless many readers of your journal are, like myself, in that unhappy position where it is necessary to do their own laboratory work, and hence have to show remarkable dexterity in keeping their soiled fingers from the gaze of the patient. The same may be said of the cigarette smoker.

The following formula is excellent for cleaning the hands:—

Rx. Kerosene soap (bar) 2 inches.

Pumice powder, 2 tablespoons.

Soda (washing), 1 tablespoon.

Benzine, 2 tablespoons.

Water, 1 pint.

First cut the soap into shavings and put them into the water to boil, and leave simmering until the soap is thoroughly dissolved. Then take the pot off the stove, add pumice, and stir well. Next add soda and stir well. Then let the mass get almost cold, add the benzine, and

batter the whole to a sticky paste. When this is done transfer the paste to a sealed tin. If desired, a little Listerine or Solysptol, added to the paste after it has first set, will give the necessary perfume.

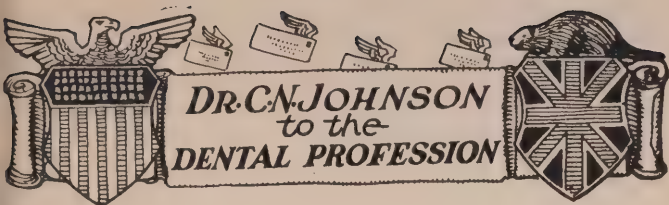
After long use I find there is absolutely no injury to my skin.—
Dental Facts.

CANINE TOOTH IN THE MAXILLARY SINUS.—In the *British Medical Journal* Mr. John Pegg reports a case of a canine tooth being pushed into the antrum of Highmore, during an attempt to extract it. The case is described as follows: "About eleven months ago a lady aged 59, began to have discomfort in the region of the right upper canine tooth. She had lost all her other upper teeth, but said that this one had never come through.

"In February last, as the pain increased, an x-ray photograph was taken, and showed the tooth lying very obliquely and pointing rather towards the midline than downwards. The gum was lanced on several occasions, and on May 1st an attempt was made to extract the tooth under gas. The wedge-shaped crown was very difficult to hold with the forceps, and at the third attempt the tooth shot completely out of sight, and no sign of it could be felt anywhere. As we thought it had probably entered the right antrum of Highmore, the patient was again x-rayed, and the plate showed the tooth lying loose in the antrum with the crown pointing backwards.

"The patient was admitted to hospital, and, under a general anæsthetic, the mucous membrane in the right canine fossa was reflected. A hole about half-an-inch in diameter was found in the anterior wall of the antrum, through which the tooth was easily reached and extracted."

Unerrupted canines are very treacherous teeth to deal with, and the one alluded to above appears to have been no exception to the rule. When the tooth is located by x-ray, as apparently quite superficial, is a great temptation to try to save one's patient trouble and expense by extracting it under nitrous oxide anæsthesia. On the whole, however, it would seem the wiser plan not to depend on the comparatively short anæsthesia that nitrous oxide gives. It is an operation that should be done carefully and deliberately, and the operator should not be hurried in any way. A longer period of anæsthesia can, of course, be obtained with nasal gas, but the nose-piece is apt to get in the way where the tooth is high up in the canine fossa. Local or regional analgesia may be invaluable, but in these cases the success of this method depends very much upon the patient. There are many patients who will not submit to what may be a prolonged operation under a local anæsthetic, even though they feel no pain. In the majority of cases ether will probably afford the best results.



Jealousy

NOTHING in the entire category of the minor vices is more mischievous or unfortunate than jealousy. It is the most noxious weed in the garden of human sentiment, and it grows in the nursery of narrowness and mistrust. It is usually the fruit of a small mind, and selfishness is ordinarily at the bottom of it. It eats like a canker into the very heart of all happiness, and destroys the peace of mind of everyone who comes within its range.

To be jealous is generally to be unjust—to be suspicious of one's own motives. No one ever succumbed to the subtle influence of jealousy without suffering a mental disintegration which warped the vision and destroyed the perspective of life. The individual who permits himself to become jealous acquires an unfortunate strabismus which makes him see men and motives from a distorted angle. No man was ever perfectly just who had a jealous mind. There is also a species of meanness about jealousy which inevitably dwarfs the judgment and makes the victim do things that are beyond the pale of honour. More happiness has been marred, more homes broken up, and more misery been born of jealousy than by any other agency. Jealousy rankles in the heart both night and day, and rends its victim like an inward claw.

Jealousy takes many forms, but not one of them with any worthiness in it. Jealousy in love affairs is the most poignant, but jealousy of the success of others is the meanest. All kinds are filled with the virus of hate and inharmony, and all are potential for the greatest evil. To be jealous is to parch the soul with internal fire, the smouldering ashes of which burst into flame and consume the victim on every untoward occasion. Pity the poor unfortunate who gives way to this obsession. It puts a blanket on enthusiasm, and drags the days into a dreary waste of envy and distrust. What incentive is there to live when every hour is filled with the venom of jealous hatred, and every act is tinged with suspicion? Better be dead than to live in this kind of agony—better to close the eyes forever than to open them each morning to the misery of a disordered point of view and a distorted outlook on life.

Much of the jealousy in this world is wholly without reason, and the cause for it exists only in the imagination of the victim. And in any event was there ever anything gained by being jealous? If there are chances to be a cause, the display of jealousy makes the matter worse instead of better; if there is no cause and the jealousy is wholly unmerited, what a travesty and hideous mistake it is to be jealous.

In love matters we often see a pathetic side to jealousy. There is no ignoring the seriousness of this mental state, and when the victim is merely sad and not vicious we must accord a certain degree of sympathy, but when hate and envy enter in and put even murder in the mind we can have nothing but abhorrence and aversion. Even then the unreasoning rage which sometimes possesses these individuals excites our pity, and we would fain exercise charity rather than mete out censure. They sometimes seem so impotent to overcome the passion which consumes them that they need a cure instead of a reproof.

But for the petty jealousy which people sometimes display towards others on account of a fancied favour of fortune; when I am envious of my neighbor because he has a finer house than mine, or a better car, or a bigger bank account; when a woman's eyes become green at the sight of a new gown or a solitaire diamond, or a sealskin coat on another woman; when a professional man backbites a fellow-practitioner because he is more prosperous than he, and has a larger practice; when jealousy engendered by the success or good fortune of others takes possession of an individual, there is little to command charity or to excite tolerance. Such a person is beyond the pale of pity, and is entitled to no quarter. It is a species of meanness which should be winnowed out of humanity's heart, and the more it is frowned on the better. People should never be encouraged to indulge in anything so senseless or puerile as this kind of jealousy. It has no redeeming feature and no justification for its existence. In an age when the average citizen is supposed to be endowed with at least ordinary intelligence and discrimination, there is no excuse for this sort of smallness.

Let the jealous person resolutely take himself in hand and purge himself of this poison. He will never know happiness till this is done—happiness for himself or happiness for others. And if it is true that happiness is the sublime achievement, then every man and woman owes it to society and to the world at large that nothing in the nature of this pernicious plant shall be permitted to take root in the soil of human conduct. No good ever comes from its growth—only evil; and evil of a kind that should never be allowed to cast its gloom over the minds and hearts of men.

If you are a jealous person, take this lesson home to you. Look in the mirror and ask yourself the question if you have ever gained the

least advantage, or achieved the slightest triumph, by giving way to this passion? Has it ever instilled in you one ennobling impulse, or one lofty resolve? Have you ever experienced a single thrill of pleasure, or the smallest glow of satisfaction? Has your head ever sought the pillow at night with a sweeter sense of peace, or a more restful repose? Have any of these supreme blessings come to you because of your indulgence in this dread disease of jealousy? If so, then you are far removed from human hope, and should shut yourself up in solitary seclusion away from your fellow-men—if not, then you should assert your prerogative and free yourself from this ignoble phantasy. You are the physician in this case, and have the cure in your own hands. Will you employ it? Do not hedge behind the plea that you cannot rid yourself of jealousy; you can do it if you try, and you owe it to humanity to make the effort.

C. H. Johnson,

Faith

ONCE a fellow feared that if he went to sleep he wouldn't wake up. The strain killed him.

The fact that there's a wide market for alarm clocks is proof that most of us believe we can be made to wake up—and also demonstrates a child-like faith in alarm clocks.

Practically every act of our lives is a demonstration of faith in something or someone. To drive a car nowadays is a proof of faith not only in ourselves, but our cars—and the other fellow—millions of him!

The check you write demonstrates your faith in a bank, and the fellow who accepts it proves his faith in you.

Nearly all business is conducted on credit—merely another word for faith.

Faith is the great lubricant that keeps the wheels of commerce turning. It is the basis of all endeavour.

Cultivate it.

ERNEST C. WILSON, in the *Nautilus*.

Oral Health

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EDITORIAL

Canadian Committee on International Relations



THE Canadian Dental Association, meeting as it does but once in two years, might well consider the advisability of naming a standing committee on interprovincial relations, composed of members nominated by each of the nine provinces of the Dominion.

There are many provincial questions affecting Canadian Dentistry which might with benefit be considered by such a committee. The experiences of one province would doubtless prove of value to others in the solution of their problems, and greater co-operation among the provinces would result.

Such a committee might be charged with the responsibility of keeping its members informed not only upon such provincial matters as

were calculated to affect the whole dental profession, but upon national questions that might directly affect the individual provinces. When considered advisable, the committee might marshal the dental forces of the Dominion and stand ready to aid a province in any way the Board of such province might desire. The resources of the whole profession ought surely to be available to any province finding itself inadequately prepared to meet the expenses of a court action involving principles that affect all of the provinces of Canada. In the matter of professional ethics, for example, if each province were left alone to meet the encroachments of organized commercialism in dental practice, the position of the profession would be weak indeed. When unethical people are left free to take up the cudgels, province by province, as suitable opportunities present, the forces of the profession are divided. Each isolated success is an encouragement to unprofessional conduct and an excellent argument in favour of attempting further encroachment. An army officer who divided his forces, permitting first one half and then the other to be defeated, would be considered a very poor tactician. But what would be said concerning a division of forces into *nine* parts, without adequate lines of communication and permitting one unit to be assailed without receiving necessary assistance from the others?

The Alberta Board was recently faced with the possibility of having to defend in the courts an interpretation of the law respecting practice in that province. The outcome of that controversy, though primarily of provincial concern, would be of vital importance to all of the other provinces of Canada.

A Canadian Interprovincial Committee might also prove extremely helpful in keeping all of the provinces informed regarding amendments to the several dental acts and changes in the academical and professional standards required for entrance to the profession.

The Ontario Dental Health Day



THE Ontario Department of Health, and the Honourable Dr. Forbes Godfrey, are to be congratulated on undertaking the organization of a Provincial Dental Health Day, to be held on Wednesday, 20th October next.

The plan has been endorsed by the Ontario Medical and Ontario Dental Associations, and over twenty-five other Associations, including the Red Cross, Women's Institutes, Service Clubs, and other important professional and lay organizations.

The value of dental health education of the public cannot be overestimated, and all modern means of publicity are being utilized, includ-

ing the schools, the platform, the press, motion pictures and the radio.

The members of the profession are co-operating in every way possible with Dr. Conboy, Director of Dental Services, and are being asked to give free examination and advice to all who request it on the day.

Reports from every section of the Province indicate enthusiastic support, and the success of the undertaking is already assured.

Common Justice for the Teeth



HERE is an ever increasing group of patients who are "from Missouri." Time was when people agreed to the extraction of their teeth without question, when so advised by a reputable dental practitioner. But more and more patients are assuming a "show me" attitude.

The modern patient may fully appreciate that his general condition is due to focal infection. He is not willing, however, that the source of infection be determined by the hit-or-miss method of tabulating all of the possible sources of infection and of endeavouring to find the actual source by a process of elimination. That method is too much like proclaiming "the operation was an entire success—but the patient died."

When all patients who seek a health service from either the medical or dental practitioner, or both, assume the attitude of "The man from Missouri" who asks to be "shown," fewer teeth will be needlessly sacrificed in unscientific endeavours to locate the source of an infection whose origin is in serious doubt.

Every tooth is entitled to a fair trial. Suspicion alone never convicts in a court of justice. All of the evidence is carefully presented *for* and *against*, and a verdict rendered only after every phase of the case has been thoroughly considered. And in spite of suspicion, the prisoner is given the benefit of every reasonable doubt.

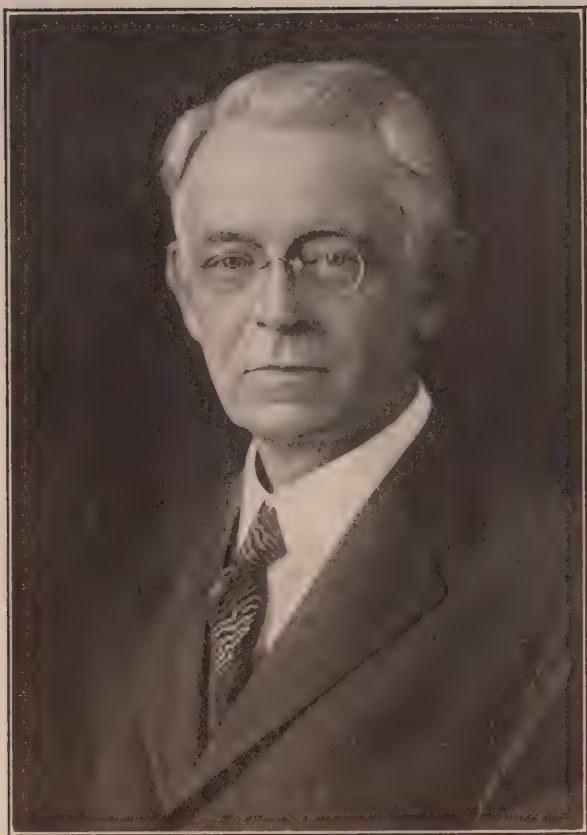
It is only just to give a tooth under suspicion a fair trial before condemning it to the forceps.

TO REPAIR BROKEN INSTRUMENTS.—Pluggers may be heated to light red heat and, whilst red-hot, hit on the plugger end hard with a fine file. Broken excavators can be reshaped with a pair of pliers and a small jeweller's rivetting hammer, and new cutting edges formed. All hammering and bending must be done whilst the instrument is red hot; they are not hard to temper and grind after being shaped up.—*The Dental Science Journal of Australia.*

A Good Book

A GOOD book, whether a novel or not, is one that leaves you farther on than when you took it up. If when you drop it, it drops you down in the same old spot, with no finer outlook, no clearer vision, no stimulated desires for that which is better and higher, it is in no sense a good book.

—*Anna Warner.*

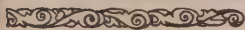


DOCTOR W. E. WILLMOTT

*D*R. WILLMOTT has been Secretary-Treasurer of the Royal College of Dental Surgeons of Ontario for eleven years, succeeding his father, the late Dean Willmott, in 1915.

ORAL HEALTH

*A JOURNAL THAT STANDS FOR THE OUNCE OF
PREVENTION AS WELL AS THE POUND OF CURE**



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No. 9

The Management of an Average Modern Practice*

DR. NEWTON G. THOMAS, CHICAGO.

IN discussing this subject epigram is impossible. This is a defensive statement because so many auditors expect an epigrammatic reply to their questions. To illustrate: A gentleman who was much interested in a famous trial that occurred in Tennessee asked a biologist to tell him why scientists believe in evolution. The biologist wished to be excused from the assignment because he knew so well the difficulties involved, but the questioner would have a reply; he had religious interests and wanted to make a statement before his confreres. Knowing the value of illustration the scientist chose the romance of embryology to give force to the claims of the great hypothesis. Very soon the listener's eyes began to wander, he showed signs of fatigue and soon remembered an appointment. Next day he proclaimed emphatically that he did not believe in evolution, that the Mosaic cosmogony was the more satisfying by far and commended it to the congregation with great assurance and peace of mind. What he wanted was an epigram that should have the brevity and force of axiom—a most difficult form of speech in science. Try to formulate one to deal with the dental educational problem, with dental economics, and so take measure of the difficulty. It can not be done.

The literature upon the subject is expansive enough. The subject is discussed from every angle. Men who are ethereal in their theory have discussed it. Men who have only a commercial viewpoint have propounded it. The professionally minded have elucidated it and men of mixed minds have mixed it more.

*Read before the meeting of the Ontario Dental Association, 1926.

One man begins with a long quotation from Huxley, dashes his pages with quotations from psychologists and philosophers, calls heredity a bug-a-boo and quotes an unnamed eminent scientist to prove that children are potentially equal but differentiate on the basis of application. Here and there are contributions worth the time of reading and reflection. They are so good indeed that when I read them I said "There is really no need for this paper of mine. A list of references to them would be sufficient." I can add nothing to those I have in mind. One recommendation alone is necessary for the reader who will look up the literature and that is that he preserve his mental balance and read with discrimination. Because a thing is printed or is going to be printed does not establish its infallibility.

What is my excuse for adding other words to vex or annoy? I confess I approached this task with temerity. In the first place you asked it. You thought there was need for the voiced expression of the fundamentals of practice building and management. With each generation the old codes and canons have to be repeated. We repeat them because we believe in them despite the evidence that to believe in anything old is to be old, despite the general belief that to-day the only principle revered is irreverence. A man in an eastern state followed the presentation of a worthy paper with a sneer at the repetition of old formulæ in that paper. He showed weariness at the repeating of ideas he knew so well. When I read it I wished to cancel this engagement. But a second thought bolstered me. "Rule upon rule, precept upon precept" is an old pronouncement. Teachers know its value. The new voice, the new face may reach some who are unreached. A very few reached and helped justify the effort. Those who regard these things as twice told tales should be patient for the sake of those who might be helped.

Three elements enter into this discussion, an unbreakable triad, a three-sided figure. They are the dentist, the patient, the office. How these elements overlap is evident. That overlapping makes the outlining of the subject difficult. We will begin with the dentist. He is to the other two what the long side of the right angle triangle is to the other sides. His importance in the consideration is as the sum of theirs.

He is perhaps the most difficult of the three sides of our triangle. We can not select him in the first place and if we did our judgments might not help much. He comes from all sorts of homes with all sorts of culture. His home might not be responsible for him. He might be the gift of remote grandparents. His attitude toward life, toward his profession, his social attitude, his standard of morals, his personality make him an unknown quantity. It would be illuminating to read statements from any group of why and how they selected their profession.

All of these elements make him difficult of placement. But in spite of all these considerations he differs not a whit from others. The human problem is too big for formulation. Still no one will deny that every item I have mentioned is most important to his success. Given all in good proportion one man is a success; lacking any one of them a man is fortunate if he can acquire it. Should he be unable to acquire the element he lacks he is thus far handicapped in his undertakings. Happily the margin of safety is broad enough for men to venture the experiment of life with fair assurance of success even though they often have only a fair equipment. Recognition and appreciation of a personal weakness is the first step toward acquiring strength. Personality, like education, taste, skill, may be developed.

In almost every article that deals with the problem of dental economics the contribution of the schools toward this phase of the dentist's education comes to the fore for mention. And that mention is not always dispassionate. Some men who evidently have had to learn much in the difficult laboratory of life and have been soured thereby speak critically or bitterly of the college weakness at this point. The teacher is referred to as "the learned professor," a brand of educator some of us have not seen in dentistry to date. Another says with amusing naivete, "With four years for the dental programme there is no reason why he should not have a course in this subject." Another who doesn't seem to know whether the dental infirmary is a collegiate responsibility or a student's pastime says, "If dental faculties understood business they would conduct infirmary practice in a business-like manner." An extra-professional voice says, "In your dental college you are told that the fee will care for itself." The man who stated that was never to my knowledge in a dental college.

To see what dental schools do with this subject I examined twenty-four catalogues to find that every one gave courses varying from eight to thirty-two hours in its presentation. The large figure was often divided between ethics and jurisprudence, which meant, perhaps, that approximately eight hours were given to each. I know those hours are pitifully inadequate and that the subject deserves more, but I also know how full our curriculums are; I know the demands made by other subjects; I know the struggle that has attended every added year that has been given to dentistry; I know the seriousness of purpose with which dental educators have approached this problem; I know something of the attitude that students bring to subjects that their precociousness tells them are not practical. They often fail to realize the practicability of some very fundamental courses until they confront some serious problem in the curriculum of life.

The schools deserve criticism no doubt but I am assured that many

of them do wonders with the materials they have to work with. Notice that on the basis of hours they are supposed to teach in four years what a school of Arts would ask six years to do. Remember that students who present at an Arts college come with little prejudice toward the content of the course to be followed. I suspect that nine out of ten dental students come forewarned as to what is theoretical and what is practical, with much advice as to which is the more important. Very frequently practitioners of years' experience are guilty of being the advisors. Teachers have such work to undo. Ethics and economics are among the discredited theoreticals. And yet how inseparably are they related? They spell out your course of toil and your social relationships. They permeate and saturate our relationship whether we are aware or unaware of it. They deserve more attention than they get, but I have seen a man of unimpeachable integrity as a man, as a teacher, as an ethicist, and as an economist driven from the lecture hall by students who later would probably applaud the things about schools quoted above.

Let me append some practical results of the foregoing attitude. Because the student of dentistry has a very definite idea as to what is valuable and what is not he misses much that the schools give him. As a result he is the victim of easy seduction when he gets enough money from his growing practice to spend. A classmate of mine once came to me to tell me he planned to take a course in conduction anæsthesia. He had \$600 in his pocket. He had a family and could ill afford to spend the money. But he had to be able to show his patients that he was as progressive as his neighbours who betimes went to some large city to advance their skill or understanding. I asked him to say definitely what he had to know to do what his neighbours were doing. He told me. I put three books on my desk and said, "All you will ever know perhaps about those things are in there. What else is necessary?" He said something about technique. I invited him to our surgery clinic and obtained for him, what was most easy to do, the surgeons' interest in the man's desire to perform the "miracle of conduction anæsthesia." He was a welcome guest at the clinic for a few days and then he went home to do what his competitors were doing, carrying with him most of the money he had brought to raise the bank account of another man. Yes, he thanked me. Read what some of these self-appointed teachers say of the anatomy, the pathology, the chemistry of their subjects and see if you remember a very small amount of what you were given in college, what ludicrous asininites they often proclaim. The much condemned theory of the school courses is the only salvation of the practitioner from such expenditures.

The foregoing might be brooked with a little effort were that all, but we know something of men whose interest in dentistry is somewhat

extraneous to say the least, who come to tell us what we should do, what we should buy, how we should adjudicate our interests. We all have seen the exuberant salesman who advises us with a raucous voice, his cigar still between his lips, his hat on mayhap, that "this bur is so fine that you can finish your cavity with it, doctor"; "this fluid will sterilize the mouth or a hand-piece"; "this obtundant will desensitize dentin but will in no way injure the pulp." Another, advising us in practice management, says, "Charge by the hour for work at the chair and the laboratory." That sounds dangerously like the demand of a plumber or a bricklayer. And to a beginner this "Equip yourself to the last word in modern furnishing. Debt will make you work." It will. Another lists the dentist himself first in the professional relationship and the patient fourth. And we pay such men to advise us.

I want to evade a discussion of the dentist's appearance. That as a value seems too evident. It seems utterly unnecessary to spend time on the question of address. I know that after the first estimate of appearance comes that of speech. Many a speaker has lost an audience between chair and lecture but more have lost it when they began to speak. Many a dentist has lost a patient because of his indifference to rudimentary grammar and pronunciation. One cannot hope to impress a patient with great learning in a specialized calling and be ignorant of the rudiments of speech. Refinements of personality foretell refinements of office conduct and practice. A grocer need not be possessed of wide intelligence to sell his wares successfully because he does not come in close contact with his patrons. The dentist, more than a physician, has occasion to converse, which occasion calls for general intelligence. The reason is obvious. But he must be only wisely talkative. I think everyone likes dignity without stiffness, self-confidence without conceit, friendliness without effusion. It must never be forgotten that friendliness may be carried to the point where it interferes with business demands.

"Is the doctor in?" I have heard it many times when I have wished for another title. "I wish to see the doctor." I would word the questions differently. "Is the teacher in?" or "I want to see the teacher." Not quite so pleasing to the ears, but a bit more pungent nonetheless. And that is exactly what your title means. In the appreciation of that name is the hope of modern dentistry. The schools are trying to make the men they graduate worthy of it; the men themselves must appreciate it. All through the literature there has seemed to be a growing popularity of the word salesmanship. If salesmen is what we are, if we are in business then that is the word, but as long as we take the title of doctor our major function is teaching. In recognition of this is the hope of dental practice. When the advertisements of the manufacturers frighten people to us, or the experience of a friend's recovery from

some malady following the removal of teeth sends others, when agonizing pulps drive them to our doors, whatever the cause of their coming the task of giving them understanding, appreciation, and the development of a willingness in them to pay for service seasoned with intelligence and skill is the task of the teacher.

In every community are opportunities for this basic work. In these days there is a call for it that as public men we cannot evade. A dentist who refuses to respond to community needs, fails of an obligation, does himself an injury. If occasions are not forthcoming he is obligated to make them. The old standards of dentistry have changed. The old mechanic has given place to the biologist. The maker of crowns is now supplanted by the man who knows something about the relations of human ills. Scholarship is added to mechanical skill and the result is health service. The reward for such is increased remuneration which such service deserves.

To teach well the teacher must possess two bottomless faiths, one in himself and the other in the value of his services. To have faith in himself he must maintain his study, of his science, of his art. When self-confidence has no intellectual acumen to support it becomes conceit. He must be able to think logically and know when he is doing it. He might sometimes be wrong, but his earnestness to be right will keep him from being wrong often. That same mental alertness will preserve him from the snare of the charlatan, from the deception of the pseudo-scientist. From what he hears or reads he will be able to select wisely, with profit. I asked a few of my dental friends what they read and I stopped with the few because of the embarrassment of the question. A man who has not the intellectual interest to read or whose interest is narrowed to a single subject dimension practises on a foundation of sand. How can a man think straight and with virility when he lets the foundation facts of his training grow indistinct, refuses his mind the stimulus of student habit and competitive thought? To have confidence, faith in one's self, one must know.

He must have faith in his work. He must believe in dentistry, its place, its function. A man cannot be true to a thing in action to which he is not true in thought. Is dentistry medical in its significance? Is it a health function? Is it a biological programme or is it mechanical and metallic? Do our operations deal with vitalities or are our protestations to that effect vagaries, self delusions? With these standards before us we keep our minds keyed to analysis and receptivity, we maintain our operations on a plane of our best endeavour. Regarding it thus we can talk with our patients about it with enthusiasm and conviction. For years I have witnessed the difficulty of bridging the gap between the science and practice in the schools. I sometimes wonder if it is ever

accomplished. In the more serious vocations of the private practice the vital connection grows and some men realize the intimacy between an infected tooth root and physical debilitation. But I am also convinced that some men never see the relationship. To the former the routine of the day is benefaction; to the other it is a job. Most frankly I should advise the man who does not believe in his calling as an exalted thing devoted to health and life to abandon it for something to which he can be true. Will anyone say this is not a basic element in success?

The patient, too, is somewhat of an unknown quantity. He presents himself always full of frailty and often full of pain. Perhaps he has no pain but comes from a sense of duty. Mayhap he is shopping. He might have read your sign and not even noted your name. Selective judgment he might never have thought necessary in visiting a dentist. Likely, too, he brings a Scotch purse with its strings in a knot. Probably he has no virile sense of ethics, allows his sense of responsibility to wear away with the age of his bill. He might be adept in excuse making for the postponement of his obligation. There is a probability, too, that he comes well referred. Samples of all are found in the ebb and flow of our clientele. They differ not a whit from ourselves. We are just folks who have become professional. Scratch us and we bleed red; swear blue. Patients are in large measure ourselves with other names. So we would meet them as we would be met. But something else may also be found over widespread areas of your Dominion and that is intelligence, a sense of fairness, a desire to undersand, an appreciation of values. I fear sometimes that dentists are with patients much as teachers are with students. Teachers sometimes speak as though being a faculty member is equivalent to being infallible. Being a teacher he is right; the student perforce is wrong. It occasionally happens that a student comes along who is better trained, better equipped, better poised mentally than the faculty man. It is well for the practitioner to know that a patient may be even so.

How will you handle them to succeed? Who shall tell you? What is implied by the phrase? What more than a sensible adaptation of ourselves to their differences with courtesy and respect? To some we shall be acceptable and to some we shall be objectionable. Some, on the strength of the recommendation given them, will remain with us for service; others will go on to find someone nearer to their liking. Some are stolidly indifferent to personality; a dentist is a dentist, men are men. Others will be sensitively balanced and will have to be served judiciously. There is no formula for this phase of practice. Each is left to his own devices, to his own judgment. No matter how crude some men may be it seems in many instances that such men develop a patronage. In the city this is perhaps more possible than in the smaller places.

The answer seems to be that people fraternize because of similarities. But we are not discussing such as these. Replies to a number of questionnaires brought to me many suggestions pertaining to personal cleanliness, personal habits, dress and the like, every suggestion palpably vital, palpably appropriate, but should I mention manual or bodily cleanliness, vulgarisms in speech, buffoonery in this presence? Scarcely! Still such rudiments of acceptable living sprinkle the literature and some very serious, thoughtful men urged them. How can a man reach the licentiate not having learned things so simple? If he has, what effect would a series of do's and don'ts from a public platform have upon such a person?

Many things are said to be expected by patients. One man said, "Patients want sympathy more often than any other consideration. Disgruntled persons leaving one dentist for another leave oftener in quest of sympathy than anything else." Another said, "Patients like to be recognized as intelligent and resent the dentist's dictum without explanation." Another insisted that patients enjoyed a dash of personal interest above other courtesies. This last man said, "If a patient told me he was going to marry, or go to the north woods, I made a note of it and when he returned I re-established connections with him often to his most evident pleasure." Akin to this is the enjoyment of one's own name. In our city buildings where doctors of every sort are as numerous as roaches and are as easily recognized, the "How do you do, doctor?" becomes a dreary inanity in a little while. Even so the mirthless smile and vapid, "How do you do, Mr——?" with the name unspoken and the voice dwindling into a moan, must become repulsive. In the above colony of doctors I used to feel like saying, "Please call me Doc., it would at least be a variation!" It is easy to learn a name and, to be practical, it is worth money to speak it. The patient knows he is not always wrong and resents the inference. If a denture does not fit it is not always nervousness or fussiness that explains it. Patients object to being made one of a crowd in a waiting room. Nothing bellows the inefficiency of a dentist louder than a populous waiting room. As a principle of practice do something for the patient every time he comes. The touch and go system of practice is decried by every person who has been afflicted by it. Don't cancel appointments; patients want to get done with you. Thus on and on the letters ran full of little commonplaces so resonant with common sense that one would suspect no mature man would need to be told. The literature is also full of just such rudimentary elements of dental deportment.

Someone suggests that obtaining patients is elemental to practice management. It seems conclusive that one must have patients before one can have practice. This problem involves the question of location.

On what grounds are locations chosen? A student old enough to have determined his vocation ought to be expected to recognize the importance of determining his location. This does not imply the settlement of the issue but rather the laying of foundations for the final estimate. When the last student year has come, the time is rather short for the consideration the subject deserves. Many times men are graduated before they know where they will labour. Should the man be very young the item is not so serious. A high percentage of graduates who hail from rural places become enamoured of the city and settle there. This is to be expected. Four years of city life, of city enjoyments, of city opportunities, of city associations, make it difficult to abandon the city. The smaller place from which the young man comes mayhap has all the dentists it can support. Perhaps, too, they are all dependable and honourable men. The ebb and flow of urban communities give the newcomer a chance on any corner. The transient is there with the gamble of a worth-while attachment. I have been convinced for years that I would prefer the city for beginning practice. The man who has predetermined to return to his home village to practise should by all means keep in touch with it during his college years. His return should be frequent enough to keep acquaintance alive. Should he prefer some other place his establishment must follow the normal opportunities for acquaintance. The civic, social, and religious life is always open to him according to his choice. Practice gathered from the activities of normal citizenship is a just and honourable return; it is the citizen's right. Should such a man choose a place that cannot support him, obviously the only remedy is to select another abode.

Beginning in a city involves other questions, but the basic elements of them differ in no way from those concerned above. As soon as a man determines to live in the larger place he should acquaint himself with the conditions of metropolitan life. Community relationships in large cities have many resemblances to lesser urban and rural life. Similar organizations of human activity give opportunity for a share in the life of such places. To go into any place and depend upon a few letters in gold leaf on a window or a board swaying in the wind, is a discouraging policy. If the city chosen be the location of the dental school, residence in the selected neighbourhood during school days with a man's participation in the interests of the chosen community will assure a beginning almost without fail. This is not always practical but it is often easy. That a student should immunize himself from all extra-mural relationships during his four years of college life is a folly. It is likewise a noticeable injury to the student. Graduates from professional schools following their years of semi-segregation often present amusing or pitiful inaptitudes when freed by graduation.

Beginning with other men is frequently chosen as a means to the desired end. This has its advantages and as frequently its disadvantages. It is a means to an acquaintance, it implies partial freedom from the full responsibility of office maintenance. According to the arrangements made it implies something of an income. But its disadvantages are worth a mention too. The patient's disparagement because he is a sort of employee. The difficulty of bringing his own patients to his chair under the contractual relation,—the gradual development of dependence upon someone else; the vexations that almost always accompany the separation when that time inevitably comes; these deserve some reflection. Certainly such relations depend upon the characters that are brought into such intimacy. I have known of instances that illustrate the union as a complete success. I have observed all grades of failure.

The third side of the triangle in later years has drawn a lot of attention. The business side of dentistry as a title for addresses and publications has become popular. The dentist as a business man has assumed the character of a joke. I think sometimes the dentist himself has often regarded himself as a babe in the woods, or the professional circle would not have been invaded by the professional salesman. Something must be wrong with us, or the folk from whom we buy would not be so interested in our welfare. I am sure those people entertain no sentiment for us. They come to teach us, 'tis true, but we pay them well for their teaching. We are told that the schools that teach economics teach it with too strong an ethical flavour. It is here that the professor is laughed at, and the curriculum criticized. It is here that the professional man is told by the business man what to do and what not to do. Here it is, we find the order of medical service reversed and the scholar and scientist, if such we are, the man of ideals and intellectual interests surrenders to the seller of things.

Let us look at the dentist as a business man. His task is the estimate of his expenses, the addition of a reasonable salary, and a margin that he deems his rightful profit. To this add the gradual increase of salary and margin as skill and confidence and experience with increase of patronage justify. He estimates the hours of his labour and the price per hour necessary to maintain the standard set. Many a housewife, in her care of the family exchequer, has problems as great. A business man forsooth! Hear the suggestions made! Charge for little things. "Go" ahead does not mean that the patient will pay. Don't reduce prices because the patient is a friend. Select the patient as the patient selects you. Treatments are the greatest "lost motion" in dental practice. Charge for broken appointments, fitting of dentures, treating "baby teeth," and so on and on, as though the persons addressed just emerged from a kindergarten. If a man does

not charge for such, what is he in an office for; or if he does not charge for a given item may he not wisely enough be considering some other factor? The number of men who make good incomes from their dentistry suggests rather strongly that much of the drivel that pours from the lips and pens of these teachers is unnecessary. Surely a man of average intelligence needs only to take time sufficient to think of his problems to make all such suggestions as I have quoted unnecessary.

From the letters I received, I learned that in many communities there was no co-operation among the practitioners. No basic cost had been agreed upon for similar operations. Co-operation was long ago established as a successful starting point for competition, but in these areas the dentists fail to benefit themselves by the principle. In others such had been done with noticeable advantage. Fixing the upper limits presents a different equation. Betimes one is told "the sky is the limit," or the practitioner has a right to charge "all the traffic will bear." I wonder sometimes just what is the honour sense of a man who will say the first, or the common sense of the man who will say the second. Both are economically preposterous. What shall be the limit? No one can tell you. That is the problem of the professional man. It is a question widely variable, modified by the parties concerned. The dentist or physician does not know the value of his work; nor does the patient know. How then can a figure be fixed? Here every man must think for himself, knowing that there is a limit to the worth of his services and the patient means more to him as a future asset than an immediate subject of gain. Beyond the limit, the demand becomes unjust; likewise at some point not necessarily low, the patient becomes justly suspicious and makes a determination that means a permanent farewell. Some men will not take a thing because it is cheap; others can not take some things because they are dear. The adjustment of prices becomes then our personal problem. No man can answer it for us. In both cases, the service rendered must be our best. The patient we accept obligates us to that best. One man I know has three sets of fees. He grades them upon the basis of the incomes of his patrons, establishing certain marginal figures. The lower figure folk he gradually deletes, and in his own interest develops the higher levels. Who will care for those who can not meet the fees of the general practice? That question takes on a civic character something apart from the issue of this paper. But certainly the dentist can do only a reasonable amount of work at cost or at a loss with fairness to himself and his dependents. Problems are the savour of the day's toil. It is the problem and the ability to cope with it that marks off a professional from artisanry.

When we talk of ethics and economics, we are prone to divorce them

too widely. In one breath we speak proudly of being professional, and in the next talk of business and salesmanship as though it were primary in importance and professional ideals a mistake. Sometimes we become rebellious and talk of these things as though we would leave the one and "Cleave unto the other." The fact is, they can not be divorced. Out of economic relations ethics grow. There was a time when people regarded ideals as of another sphere than daily experience. Religion and business, religion and politics were loosely united. Then came a change. We aver to-day that a religion is a poor thing that doesn't find place in every endeavour. Ethics and economics are like the Edenic pair, the "twain are one flesh." We may speak of dollars and cents and be decently professional. We may speak of income and still be possessed of idealistic integrity; bills and debts need not to be whispered or collections for fear of class ostracism. There is a finesse, a sense of nicety, a sensitivity to intimate things that should restrain one from public orations about them. No man whose service has to do with health, life, the faith of others, has a right to place money in the foreground.

Service is distinctly public in its relationship; remuneration is distinctly private—both service and remuneration are definitely and indispensably personal. Read any treatise on ethics, and see if we have been justified in many of the things we have heard and applauded. May I quote: "A price is supposed to bear upon some pretty definite relation to cost of purchase and manufacture with the added expense of carrying it in stock and the like. There is a much greater flexibility about a fee. The primary basis for a fee is the same as a price or wages, but a fee can be influenced by the art, knowledge, skill, the judgment and wisdom and reputation for success as well as the importance of the service, the risks attending it, the benefit following it and the injury resulting from failure. Likewise must be added the ability or inability of the patient to pay." Is that a dollarless idealism? That is a quotation from the work of a college lecturer.

I purposely avoid office equipment and details of office management, submitting only the stimulus to enough self-confidence to believe that there is nothing occult, nothing esoteric, nothing recondite about it, persuading you that you are equal to the occasion of its analysis, the discovery of your short-comings, the places of your loss. Certainly, a man capable of the training every one of us has borne should be capable of that. Should one find himself inimical to business processes in their simplest form, his assistant might be of service or an accountant. I know some men whose wives provided the acumen that made a success of their husbands' service. I take it that it is no disgrace to have a

distaste for figures, but it is a disgrace not to have the figures adjusted with justice to one's self and one's dependents.

Make of the office an observation station in the interest of dentistry—of material service—tissue response to treatment, variations from what is thought to be normal, causes and effects. Test out for yourselves the principles of your own practice, tabulate, study and make deductions. In other words, maintain an alertness that shall have for its object an aid to yourself and your profession. When confronted by problems, use your schools more than you have done heretofore. They are at your service. In fifteen years of teaching, I have received only one request for information that might be expected of my department. I have asked other teachers, and find that exceedingly few men keep in touch with the school specialists in any line. I know the common retort, but our denture instructor sees more dentures and directs in the making of more than any "specialist" in private practice. Our crown and bridge prosthodontist, our pathologist, sees more, and I'll venture to say, knows more than any peripatetic income-enlarging, self-adulating oracle we pay to talk to us. Submit to the schools your findings, and feel yourself grow in a productive interest as together you and they evolve information worthy of a place in general knowledge. In the States, a step was taken to advance the practitioner's interests in the organization of study clubs. I suspect sometimes that they have not been the success they might have been for the reason that not much studying was done. Study is an intimate, individual thing. Some one doing it for us gives only a partial result to us. Some things we must do ourselves. We vitalize our practices with our own brain might and not that of another.

Purposely have I made the dentist primary in all the considerations I have presented. He is the major figure, the most important element in all office considerations. With him, finally, is the last word pertaining to the activities within his office walls. With him is the management of the business practice, average or otherwise. I have wished to see him the master that he easily may be, his own director, his own judge, his own analyst. Should he fail to make himself do what he readily may do, should he insist on aimless business practice, should he resent the demands of his professional ideals, in other words, should he prove that dentistry is no place for his life endeavour, it is creditable to do something else. A diploma is not an oath of allegiance to misplaced energy, a badge of imprisonment to a life of mis-service.

Knowledge comes, but wisdom lingers.—*Tennyson.*

The New Dentistry Act, Province of Ontario

E. E. BRUCE, D.D.S.

Past-President, Royal College of Dental Surgeons of Ontario.



I WANT to first congratulate the Executive Committee of the organization for the fine and instructive Convention which they have arranged for us. It is proving a wonderful success. I have no paper to read to you, as the President has intimated, and would like to speak of a few things in a rambling way before touching on the Act. These may not all be new to you, but outside of the Board there are few I think who realize the momentous things which have happened in connection with Dentistry in the last couple of years. The profession has progressed not only from a scientific standpoint, but in the matter of public recognition. When the present Ontario Government saw fit to give us representation in the Public Health Department, it was an advanced step, and the appointment of Dr. Conboy to act in that capacity, we must all admit, meets with general approval. He seems to be the man typically fitted for the work, full of pep and organizing ability and sound judgment, and the Department is most fortunate in having secured his services.

In passing let us touch briefly on the point of the University taking over the Faculty of Dentistry. This result was inevitable, and the vote being almost unanimous shows that the profession thought the time had come for the change. Under the circumstances the first year would of necessity be a year of adjustments, and while a few difficulties may have been experienced by the Faculty, we hope to see these overcome in the near future.

The decision re dentists advertising, as given about a year ago, was a very important one to the profession. The Board felt that this question had to be decided and forced the issue. The Discipline Committee were of necessity forced to do much work for some time past and their efforts deserve mention. The work of this Committee is somewhat of a police nature and, so, distasteful to anyone of finer feelings. It is also absolutely necessary to keep Dentistry on the status it should be and at the same time protect the public. Much credit must be given to Dr. Gordon McLean for the manner in which he handled this work and the time and energy he has given for the general good. Very few men realize the sacrifice that has taken place on the part of the chairman, Dr. McLean, and also his committee.

Now for the new Act. I shall refer to the changes and try to present them briefly, as it is a dry subject to handle in an interesting manner. The taking over of the Faculty of Dentistry by the University of Toronto necessitated some changes in our Act. Your Board

*Report presented at the Convention of the Ontario Dental Association, 1926.

felt that under the circumstances a general revision of the Act might be wise, and so a strong Committee of the Board was appointed for that purpose. The best of legal advice was obtained, and after much deliberation, consultation, and hard work on the part of the men on this committee, we have to report the Act as we have it to-day. I would not care to pass this subject without paying a just tribute to the chairman of this committee, Dr. Mason, and the man from Hamilton they call the "Colonel." I would like to take off my hat to them, as it is owing to their efforts, largely, that we have an Act which is a model for any province or state to go by. To all who assisted in this work we wish to render thanks. The committee in their deliberations had in mind the protection of the public as well as ourselves. It is by the grace of the Ontario Legislature, or in other words the public, that we enjoy the privileges we do as a profession.

Now the Bill that was passed by the Legislature is changed as follows:

Down to Section 4 there is no change. Taking Section 4 and Sub-Section 2, you will notice the old Act called for eight members. The change is to nine instead of eight.

Then in Sub-Section 3 of Section 4, instead of four the number is five required to form a quorum.

Section 4 combines Sub-Sections 3 and 4 of the old Act. Section 4, Sub-Section 5, one member from Faculty of Dentistry in University of Toronto, instead of from Faculty of School of Dentistry. Sub-Section 6 of Section 4 combines old Sub-Section 6 and Section 7 (a), provides for election to fill vacancy in a District, instead of vacancy being filled by remaining members of Board. (b) same as old Sub-Section 6.

If you will go back to Section 5, Sub-Section 2, where the change has been made to nine instead of eight members, this was occasioned by one additional district, North and West of Parry Sound. Very rapid increase in the number of dentists in that district is responsible for this change. When the present districts were outlined there were 5 North and West of and including Parry Sound. Now there are 102.

Section 6, Sub-Section 3, there were 4 lines struck out, as power is sufficient under Sub-Section 4.

Section 7, Sub-Section 3, gives President power to call special meeting of the Board. The old section required the request of four members before he could do so, and this was often very inconvenient.

Section 8, Sub-Section 4, provides for an Executive Committee which may attend to emergency matters, instead of calling whole Board together. All organizations have such a Committee.

Section 9, the old 10 was limited to \$20.00. This amount is now to be set by a By-law.

Section 10, Sub-Section 2, "The Board may out of any funds in its hands from time to time make grants:

- "(a) for post graduate courses and kindred educational extension work.
- "(b) for scholarship, lectureship and research work; and
- "(c) in aid of any fund which has for its purpose investigation in the interest of dental and surgical science; and
- "(d) in aid of any association or other body having for its object the protection of members of the College or the adjustment of claims against them for anything done in their professional capacity."

This is to allow grants to be made for the advancement of dental research, or for good of the members of the College. Same as Amendments to Medical Act.

Section 12, Sub-Section 2, was "Prior to entering into Articles with a Licentiate—"; practically the same thing now.

Section 14, there are certain lines struck out of the old Section 15 as not being necessary.

Section 16, Sub-Section 5, to enable the Board to accept examinations of Faculty of Dentistry in University of Toronto.

Section 20, here there is no change in the meaning. It is only re-worded in order to clarify the meaning.

Section 21, Sub-Section (1), re-worded from old 24—range of \$1.00 to \$3.00 not sufficient to enable proper administration and is now same as Medical Act.

Section 21, Sub-Section (3), to facilitate collection of fees and is similar to provisions in Solicitors' Act. Also in other Provinces and States as follows:

ANNUAL REGISTRATION.

State	Penalty if not paid by certain date.	Additional fee to be re-stored to good standing.
California	License forfeited	\$25.00
Connecticut	Suspension	25.00
Delaware	Cancelled	5.00
D. C.	Illegal Practitioner	5.00
Idaho	Illegal Practitioner	10.00
Indiana	Cancelled	5.00
Kentucky	Cancelled	5.00
Nebraska	Cancelled	10.00 to 50.00
New Jersey		finer \$300 to \$600
New York	Illegal	\$1.00 day for 30 days
Manitoba	due March 1—\$10.00, if paid by February 1st, \$5.00. After March 1—illegal practitioner—may be suspended for 6 months and fined \$50.00, and additional \$50.00 for reinstatement.	
B. C. (Proposed)		50.00
Ontario	Cancelled	10.00

Section 22, Sub-Section 1, old 25 (1) re-drafted and the last five lines added. "A practice has grown up of laboratory men attempting to carry on work as mechanical and other kinds of dentists, and thus by misleading advertisements induce people to come to them for work which they are not capable of doing." This is necessary for the proper protection of the public.

Section 22, Sub-Section (2), for the purpose of eliminating fake dental schools and confining dental training to the College and a University Faculty.

Section 22, Sub-Section (3), makes fine definitely \$50.00 and \$100.00 instead of not exceeding \$50.00 and \$100.00.

Penalty for practising without License.

California	\$100 to \$1,000, or 10 days to 1 year, or both.
Connecticut	to \$100 or a 6 months' term, or both.
Delaware	\$50 to \$200, or 1 month to 1 year, or both.
D. C.	\$100 to \$200, 2nd offence to \$500.
Florida	up to \$1,000 or to 1 year, or both.
Idaho	\$50 to \$200 or 6 months, or both.
Illinois	\$50 to \$200 each offence.
Indiana	\$50 to \$150 or 30 days, or both.
N. J.	\$300 for 1st, \$600 for each subsequent.
N. Y.	\$100.
Saskatchewan	\$50 to \$200 for 1st, \$100 to \$400 for each subsequent.
Quebec	\$50 to \$100 for 1st, \$100 to \$200 for 2nd, and \$200 to \$500 for each subsequent.
Alberta	\$50 to \$200 for 1st and \$400 each subsequent.
Manitoba	\$50 to \$200 for 1st and \$400 each subsequent.
B. C.	\$25 to \$500 for 1st and \$100 to \$500 for subsequent.

It often costs \$50 or more to obtain evidence. Section 22, Sub-Section 5, this has been re-drafted and part of it eliminated.

Sub-Section 24, Sub-Sec. (3), enables the Executive Committee to authorize the Discipline Committee instead of having to call the whole Board together.

Sub-Section 25, Sub-Sec. (3), to obtain continuity and to assist the Committee the Board wish to make the Secretary a member of the Committee as he may or may not be a member of the Board.

Section 25, Sub-Section (10), sometimes it is desired by the member and often more convenient to have the hearing in Toronto.

Sub-Section 4, 5, 6, 7, 8 and 9, the same as old section 27.

Section 25, Sub-Section (11), here there is a change from 14 days' notice to 10. In cases already handled 10 days has been found more than sufficient.

Section 25, Sub-Section (20), makes the taxation before a taxing officer of Supreme Court at Toronto. This is practically the same.

Section 25, Sub-Section (21), new Sub-Section added to clarify the question of costs. Sub-Section 22 of old Section 27 and old Section 29 did not state definitely on what scale the costs were to be taxed

nor what work could be charged for. Last three lines to cover cost of preliminary investigation before charge is laid.

Section 27, this was amended to make time for bringing appeals the same as the time for an ordinary County Court appeal.

Section 28 is the same as the old.

Section 29 was changed to limit time for bringing action for malpractice. No limit up to now. In the old Act an action could be laid any time after the operation, now it must be laid six months after or it is no longer legal. Suit cannot be brought after six months.

Sections 30 and 31 are the same as the old Act.

Gentlemen, as the professions came into being they did so with the motive of service to their fellow man and not money-making, and while it is necessary that we keep before us the fact that we must provide for ourselves and those depending upon us, let us not forget that service entails a certain amount of sacrifice. As we all know, Dr. Conboy is arranging for a big Dental Health Day in October. Let us measure up to this test and be willing to sacrifice a little to make it a success. One may sometimes make a mistake in the effort to do good, but is seldom able to look back on a deed of kindness with regret.

My Idea of Dentistry in 1950

C. N. JOHNSON, CHICAGO, ILLINOIS.



ANY men have confidently predicted the end of the world at given dates. I have lived through several of those dates myself and the world still wags—showing that predictions are not always reliable. Therefore my predictions about dentistry in 1950 may be all amiss, but that doesn't dampen my ardour for making those predictions.

In 1950, I think I see less dread of dental operations than there is to-day: there is less dread to-day than there was a quarter of a century ago. This will be due not so much to the increased use of local anæsthetics as to improved methods of operating, and to the earlier attention that will be given the teeth of children by their parents. The prevention of dental disease will be more nearly an accomplished fact, not in all probability, because of anything spectacular or revolutionary in our discoveries, but because of a wider knowledge of the benefits of prevention, and a closer co-operation on the part of the public and the profession. Prevention, if it ever comes, must come through the efforts of the people more directly than through the profession. The only thing the profession can do is to point the way. Prevention will come through better modes of living, better sanitation, more intelligent regula-

tion of diet, greater co-ordination of mind and body, better thinking. I have sometimes thought it *might* come through vaccination. But I have been laughed at for saying this, and that is one reason why I repeat it now—I like to make people laugh. Sometimes an apparent joke turns out to be the profoundest truth.

In 1950, the care of children's teeth will be considered even more important than it is to-day, because of the fact that it will be generally recognized that any disease that is the most prevalent of all human ailments must be reckoned with in its earliest stages if it is to be controlled or cured. To this end, in 1950, expectant mothers will be trained in the fundamentals of health habits as they relate to the building up of strong and vigorous offspring, and they will know more than they do to-day about the proper feeding of babies and young children for the maintenance of good health.

In short, as I have just intimated, the prevention of dental disease must be carried out in the home where, after all, every real reform finds its consummation. My plea to the people is that they maintain an open mind on questions tending to the prevention of diseases of all kinds. Disease is the most appalling extravagance of the age, the most criminal wastefulness. The cost of disease in this country alone runs annually into the billions—a sum vaster than you or I can comprehend—and much of it is preventable, even with our present knowledge.

The history of the world goes to show that in working any reform the problem is not confined to gaining sufficient knowledge for the reform—the chief difficulty lies in inducing those for whom the reform is intended to take advantage of it. If the people of this nation to-day really want to live healthier, happier, more economical and altogether saner lives, they can do so. It is merely a matter of taking advantage of the knowledge at our present command, and, on the part of the people, in co-operating with our health authorities in all measures concerning their physical welfare.—*The Journal of the American Dental Association*.

NATURE IMITATED.—Nothing disguises an upper denture so much as the correct placing of the lateral teeth.

As a rule they are used too long at both ends.

They should be "tucked in" at the neck, and, above all, they should be shorter than the centrals.

This breaks up the incisor line, which should never be absolutely even, showing up with painful effect against the dark background of an open mouth.

Convention of the Ontario Dental Nurses' Association



THE fourth annual convention of the Ontario Dental Nurses' Alumni Association was held in Toronto 17th, 18th and 19th May, 1926. There were 85 registered delegates.

Miss Gertrude Whitehead, President of the Association, called the convention to order and presided during the meetings. Addresses were delivered by Mrs. A. M. Heustis, Drs. Jackson and McCrum and Judge Mott.

* * *

The Dental Nurse and Dental Radiography

DR. JACKSON.



THE Dental Nurse can be of as great assistance to the dentist in the radiographic branch of dentistry as in any other. In this field the attention to details in technique is just as important as in other branches of laboratory procedures.

The present teaching is that a minimum of fourteen films is used to cover the areas under examination. The reason for the use of fourteen or more films is a minimum of distortion of length as well as breadth of the individual teeth. The use of but ten films necessitates a marked distortion of either the cuspid or bicuspid teeth, due to the curvature of the dental arch. In order to lessen still further the tendency to distort the tooth image in the film, place the film in the patient's mouth with as little bending as possible. Be particularly careful not to bend that portion of the film upon which the image of the tooth in question is to be registered. In certain areas, such as the first bicuspids, the cuspids and lateral incisors, it is necessary to bend one corner of the film, but this will permit the registration of the indicated tooth with no distortion. The purpose of dental radiography is to obtain as nearly accurate an image of the hidden structures as possible, and you can readily understand that bending of the film will produce a result similar in many cases to a person's standing before one of the trick mirrors in an amusement park that distort a figure entirely out of correct shape.

One of the first principles of radiographic technique is cleanliness. This includes not only the hands, but also the films, the loading bench and the entire dark-room. The presence of dust upon the surface of a film will not only change the appearance of it but will interfere with careful interpretation. Dust particles can either be embedded in the emulsion before development or blown on the moist surface while

drying. The hands should be dry during handling, as otherwise the fingerprints will be registered and interpretation interfered with.

Some patients are easily nauseated and others think they are. The former can usually be handled by instructing them to breathe rapidly and shallowly through the mouth while the film is in the mouth. The use of the Bolin film in these cases is also frequently helpful. The latter type of patient is the most difficult to deal with. They will struggle and attempt the best they think they know how to aid you, but this only seems to increase the nerve reflex. It is only by appealing to their intelligence that favourable results can be obtained. The use of suggestion is of value. Point out that it is a nerve reflex induced by dread or fear, and that we expect such difficulties with children and persons of low mentality, but that an educated person is merely permitting their imagination to run wild.

One of the most common errors that is noticed is the tendency to over-expose or over-develop the film. It is difficult to distinguish between the two unless one particular type of film is used. The over-exposure of a film results in a great loss of detail which if present would aid in intelligently interpreting the radiograph. The over-development of a film produces a similar result, but this can be overcome many times by "reduction" or chemically treating the film to make it more nearly normal in appearance. The latter process takes time, however, and special chemicals need to be used. I prefer to use the "Buck" film because of its metallic border, which registers as clear surface about the body of the film if it has been properly exposed. If there has been an over-exposure the border will not be clear and translucent, but will be darkened according to the degree of over-exposure. If the film has been over-developed the border will be clear, but the body will be darkened. If one will but study the detail of correct timing, a great deal of trouble in interpretation will be overcome and the time necessary for "re-takes" of the same area will be saved.

The next step is the process of development. This should be done with fresh chemicals mixed accurately. The *exact* quantities of the different agents used are essential to obtain good radiographs. The manufacturers of the different preparations used in development do not put the formulas on their labels to be followed merely *approximately*, but instead they should be followed *exactly*. The temperature of the solutions is important. If it is possible to keep the solutions surrounded with running water at a temperature of 66°-68° F. the best results will be obtained, especially if the time the film is kept in the developer is *timed* rather than assumed by visual examination of the film before the safe-light. If running water is not available, then the washing of the films is best accomplished by changing the water at least six times during a period of twenty to thirty minutes with stirring of the film in

the water as much as possible. The films should be dried in circulating air.

The "safe-light" used to illuminate the dark-room should be of such a type that an unwrapped, unexposed film with a small coin placed upon it can be exposed to its light for a period of at least twenty minutes without any registration of the coin after the film is developed.

The unused films should be kept in a metal box which is impervious to the x-ray, as otherwise they may be "fogged" and rendered unfit for use.

Many dentists still ask the assistant to hold the film in the patient's mouth while the exposure is made. Do not consent to this practice, as while the dosage is small there is a cumulative effect that will be uncomfortable if not disfiguring and dangerous. It may seem as though one could be too particular on this point, but I assure you that if one is really trying to look after one's best interests it is impossible to be too careful in this instance at least. Also in examining patients do not give more than a total of six hundred milliampere seconds of x-ray dosage to any one area within a period of two weeks. It is impossible to state the limit of tolerance each individual has to these radiant forces with which we are dealing, but using the average dental machine and the usual distance the above figures may be accepted as a safe limit.

In closing, I will simply reiterate my previous statement, that I consider a nurse justified in refusing to expose any portion of her body to the rays, except in those cases where it is impossible for the patient to hold the films and there is no relative or friend accompanying the patient who can hold them instead. The cumulative effect is so insidious in its action and so delayed in appearance that the harm is done before it can be noted.

* * *

Address to Dental Nurses

JUDGE MOTT.



THE entering of the female members of our population into the fields of service in our modern life is not simply a passing incident. It is an evidence of the conditions of the time. It is evidence of a distinct opportunity, and it is convincing evidence that there are some people who cannot avail themselves of opportunities and meet obligations, and others who can. Professional men are looking to-day to the young womanhood of our country and asking them to make a definite contribution to the welfare of the world in which they live, a contribution which they have found they could make. All of us have a direct opportunity and a direct responsibility to make the world in which we live a better place to live in, and I

recognize that you are filling a place that could not otherwise be filled and are making a particular contribution to modern life.

We do not live in the world that our mothers and fathers lived in. We do not live the same way, think the same thoughts, have the same viewpoint. We are not privileged to think so quietly and carefully as they did. The radio and the motor car have broken down walls. They have annihilated distance. As we broaden our home we enlarge the community, and as we do that we widen and make more complex the life we live. The life you live is many times more complex than the life your mother and father lived. This is a new world, a new time, a new opportunity. Every growth carries with it opportunities, but it also carries with it responsibilities.

Think of the great progress which has been made in the medical world. How we have grown. We have lengthened the span of life nearly twenty years in the last few generations, and we have kept alive many people who started life under handicaps.

The boy of to-day is vastly different from the boy of a few years ago. The boy of to-day sees more, knows more, than ever before. So do girls. Boys and girls to-day have wonderful powers of resource. There is no one more resourceful than a boy or a girl. They can get into difficulties and out of them quicker than at any other time in the world. There is no better field to which you can direct your attention than to the boys and girls.

The complexity of modern society has given us an added difficulty, the problems of the mental complex. If you are going to successfully deal with the patient before you, you must know something about the mental condition of the patient you are going to deal with. Do not forget that many suffer from mental complexes, ideas that are out of harmony with those by whom one is surrounded.

When you are dealing with people, study their mental troubles, and the way to do it is to have a sympathetic listening ear. One of the greatest cures for the troubles of this world is to have someone listen to your story. When you listen sympathetically, lovingly, you have done more than you know. You have provided an outlet. You know the great value of an outlet. You know what it means when there are held under compression physical conditions, such as abscesses. Did you ever stop to think of a mental abscess?

We all have mental problems, a sense of inferiority or superiority, a feeling that we are different from anybody else; perhaps we do not adjust ourselves rightly; perhaps we do not get an opportunity to express ourselves rightly, and because we do not fit in just right or do not get all that we think is coming to us, we are likely to get a little bit sore, a little bit disgruntled. You should not suffer from any inferiority

complex like that, and you need not if you will just analyze your feelings. Just think out your own power and marshal it. There is no person who knows your power better than yourself, and knowledge of your power will help to settle any sense of inferiority you have. Do not be ashamed of what you know, and do not be ashamed to say what you know. Knowledge is not power, but the correct use of knowledge is power. When you know, *and know that you know*, you need have no fear of your own power.

Whatever you are doing in life, learn to do it well. When you learn to do it well you can look the world in the face, you will not be afraid of anyone you meet.

You are going to meet these complexes in other people. There is a wonderful opportunity. By listening to the story that they tell you in an intelligent way, and by putting your finger on the weak spot and showing that man or that woman that *that* is the weak spot, you can turn them away with a new viewpoint. Listen with an attentive ear and you can make a creative suggestion. The careful, intelligent touch of a trained person is a mighty factor in construction. The biggest thing in life is to help to adjust. There are those who have the creative fire and the creative vision, and they can do things, but that is not given to many of us. The biggest thing in life for the rank and file is the adjustment that we can make. Nature can cure, but you and I can adjust and help nature.

Seek to make adjustments. They are the things which tell. If you can pass out from your office a patient who will feel the better for having been in contact with you, if you can turn them out into the world from whence they came with a clearer vision, with a broader concept, with a higher ideal, with a more splendid way of meeting life, you make a contribution to life, you justify your existence, and will honour and adorn in a real and practical way the organization with which you are associated.

TO REMOVE MODELLING COMPOSITION FROM IMPRESSION TRAYS.—After having tried different methods for cleaning impression trays, I have found the following to be the most satisfactory: Heat the impression tray in water at about 140° F., and remove the bulk of the material; then immerse the tray for half-a-minute in boiling water. Remove and clean with a fair-sized wire brush, either by hand or on the lathe. The tray can thus be perfectly cleaned and burnished at the same time.—*Dental Cosmos*.

Standardized Technique For Aseptic Removal of Root Apices*

H. C. CRAMER, D.D.S., MILWAUKEE, WIS.



SCIENTIFIC investigation with reports materially affecting present methods of practice in dentistry has aroused so much adverse criticism in some quarters, and such enthusiastic commendation in others, that neither the student nor the clinician of judgment may know what to accept nor what to reject.

In view of this chaotic condition, it was determined to attempt duplication of some of the more prominent investigations. To do this and avoid certain possible errors, a standardized and dependable technique for aseptic removal of root apices first engaged our attention. This work was undertaken with a full understanding of the difficulties and many opportunities for error. Experiments were conducted with several aseptic solutions to determine their effectiveness and compatability with mucous surfaces, and the following technique has been adopted. Each step has been tested many times for contamination by the same methods used in culturing the infected tissue, and uniform results have been obtained. No originality is claimed for the different steps employed, nor is the technique recommended as a routine extraction procedure, but with proper care contamination can be avoided and aseptic removal of uninfected root apices can be accomplished.

The mouth is first packed with autoclaved gauze, with particular attention to salivary ducts. After thorough isolation, the area about the tooth to be removed is scrubbed with alcohol, taking pains to get a good quantity between the teeth and into the gingival crevice. Following this application, cultures taken by the swab method and grown on a blood agar plate will show a moderate growth compared with cultures from the uncleansed surface. Anaerobic growth, however, will be only slightly lessened.

Following drying of the alcohol the surface is bathed in 10% aqueous solution of mercurochrome, rubbing with a swab to work this well into crevices and folds. When this is properly done, cultures from the surface of the mucosa are invariably sterile. A coating of tannic acid 10% in 80% alcohol is then painted over the whole area and adjacent tissues. Such a coating prevents migration of organisms and assists in keeping the surface dry. This procedure was suggested by Dr. Preicht, of Koenigsburg, and is an excellent aid, as moisture is controlled and the chance of error lessened.

*Dr. Cramer is associated, as Dental Officer, with the Department of Preventive Medicine in the A. O. Smith Corporation.

An incision in the manner of the so-called surgical extraction is now made from the lingual cervical margin of the tooth situated mesially and carried well above the apical area of the tooth to be extracted. The interdental papillae is incised well into the interproximal space, and with the periostome a flap is gently reverted, exposing the buccal plate to the tooth apex. The buccal wall of the alveolus is resected two-thirds the length of the root. The entire area is again bathed with murcurochrome and dried. If this is done rapidly and with care, a dry operative field may be obtained for removal of the tooth. Such a condition is important, as high dilutions of blood from an infected area will often give a streptococcal growth. After drying the murcurochrome the tooth is grasped in a sterile forcep, loosened and removed by tipping to the buccal, so that the gingival crest is never passed by the apical portion of the root.

A small portion of the apex is immediately excised into a tube of Locke solution and sand. Ten minutes agitation of this tube in a shaker produces maceration of the apical cementum and separation of colonies for culture purposes.

As stated earlier in this article, culture controls have been uniform and encouraging. These have been made from the gingival mucosa and crevice following isolation, but previous to medication, and as should be expected, show a profuse mixed growth. In culture following the application of alcohol aerobic organisms are considerably lessened. Following the murcurochrome bath smears from the gingival surface are negative, but the gingival crevice will continue to harbour a few organisms. Following reversion of the flap an occasional colony will be found on the buccal alveolar plate, undoubtedly deposited here by the periostome.

When the buccal plate has been resected and the last application of murcurochrome completed, swab cultures are negative in all properly selected cases. Selection is made from non-pyorrhetic teeth anterior to the first molar in mouths in which the flow of saliva can be controlled. In certain types the first molars may be included.

I am presenting this work at the suggestion of the Editor of ORAL HEALTH, in the interest of a more uniform procedure in studying focal infection.

I sincerely hope that the time may be short until a rational practice will be accepted in dealing with oral foci, and a bewildered and discouraged public will no longer have to choose between directly conflicting advice in an effort to preserve their health.

Fill to-day with work; to-morrow with hope.

Extracts From Sir William Osler's Farewell Address to American and Canadian Medical Students



XCEPT it be a lover, no one is more interesting as an object of study than a student. Shakespeare might have made him a fourth in his immortal group. The lunatic with his fixed idea, the poet with his fine frenzy, the lover with his frantic idolatry, and the student aflame with the desire for knowledge are of "imagination all compact." To an absorbing passion, a whole-souled devotion, must be joined an enduring energy, if the student is to become a devotee of the grey-eyed goddess to whose law his services are bound. Like the quest of the Holy Grail, the quest of Minerva is not for all. For the one, the pure life; for the other, what Milton calls "a strong propensity of nature." Here again the student often resembles the poet—he is born, not made. While the resultant of two moulding forces, the accidental, external conditions, and the hidden, germinal energies, which produce in each one of us national, family, and individual traits, the true student possesses in some measure a divine spark which sets at naught their laws. . . . There are three unmistakable signs by which you may recognize him . . . an absorbing desire to know the truth, an unswerving steadfastness in its pursuit, and an open, honest heart, free from suspicion, guile, and jealousy.

METHOD IN STUDY.

A word or two on method in study, though it is not an easy matter to discuss, for the very good reason that there is no one method suitable to all alike. Who will venture to settle upon so simple a matter as the best time for work,

THE TIME FOR STUDY.

The other day I asked Edward Martin, the well-known story-writer, what time he found best for work. "Not in the evening, and never between meals!" was his answer, which may appeal to some of my hearers.

TWO TYPES OF STUDENT.

Outside of the asylum there are also the two great types, the student-lark who loves to see the sun rise, who comes to breakfast with a cheerful morning face and in hilarious spirits—two hours of work and half an hour's exercise before breakfast, never so "fit" as at 6 a.m.! We all know that type. What a contrast to the student-owl with his saturnine morning face, thoroughly unhappy, cheated by the wretched

breakfast-bell of the two best hours of the day for sleep, no appetite, and permeated with an unspeakable hostility to his vis-a-vis, whose morning garrulity and good humour are equally offensive. Only gradually, as the day wears on and his temperature reaches 98.2° , does he become endurable to himself and to others. But see him really awake at 10 p.m.! While the plethoric lark is in hopeless coma over his books, from which it is hard to rouse him sufficiently to get his boots off for bed, our lean owl-friend, Saturn no longer in the ascendant, with bright eyes and cheery face, is ready for four hours of anything you wish—deep study, or “Heart affluence in discursive talk,” and by 2 a.m. he will undertake to unsphere the spirit of Plato. In neither a virtue, in neither a fault; we must recognize these two types of students, differently constituted owing possibly—though I have but little evidence for the belief—to thermal peculiarities.

MIND-TRAINING.

Get accustomed to test all sorts of book problems and statements for yourself, and take as little as possible on trust. The Hunterian “Do not think, but try” attitude of mind is the important one to cultivate. The question came up one day, when discussing the grooves left on the nails after fever, how long it took for the nail to grow out, from root to edge. A majority of the class had no further interest; a few looked it up in books; two men marked their nails at the root with nitrate of silver, and a few months later had positive knowledge on the subject. They showed the proper spirit.

CONCENTRATION AND THOROUGHNESS.

Men will not take time to get to the heart of a matter. After all, concentration is the price the modern student pays for success. Thoroughness is the most difficult habit to acquire, but it is the real pearl of great price, worth all the worry and trouble of the search.

THE DILETTANTE.

The dilettante lives an easy, butterfly life, knowing nothing of the toil and labour with which the treasures of knowledge are dug out of the past, or wrung by patient research in the laboratories.

TO REMOVE A PORCELAIN CROWN.—A porcelain crown was loose enough to move about, but yet too firm to be removed by the fingers, and forceps would certainly have chipped it. A wooden clothes peg, cut short and forced so that the tooth wedged tightly, gave a good grip and soon removed the crown unharmed.—*Dental Science Journal of Australia*.

Annual Examinations of the Dominion Dental Council, June, 1926

The following candidates have passed the Dominion Dental Council examinations in the subjects indicated below:

Pathology and Bacteriology—Addinell, W. E.; Bagnall, Stanley; Blackburn, Wm. J.; Butcher, E. C.; Connell, E. W.; Cross, S.; Dougall, J. H.; Endicott, C. S.; Gerrie, J. W.; Hainer, Wm. E.; Holt, S. W.; Hoag, J. R.; Hughes, Wm. R.; Kennedy, E. L.; Montgomery, A. R.; McBroom, R. E.; Olmstead, W. J.; Phin, A. W.; Polack, I. G. G.; Porter, C. A.; Stark, S. E.; Thomas, W. G.; Thurston, G. B.; Urie, E. H.; Wilkes, J. B.

Pathology Only—Adams, Lois; Cowan, F. H.; Hutzulak, P.; Kennedy, H. J.; Milburn, Wm. B.; McCarthy, T. G.; Reeves, H. W.

Bacteriology Only—Stett, M. L.; Smith, Donald.

Jurisprudence and Ethics—Adams, Lois; Addinell, W. E.; Blackburn, Wm. J.; Butcher, E. C.; Connell, E. C.; Cowan, F. H.; Cross, S.; Dougall, J. H.; Endicott, C. S.; Hainer, Wm. E.; Hoag, J. R.; Hughes, Wm. R.; Hutzulak, P.; Kennedy, E. L.; Kennedy, H. J.; Milburn, Wm. B.; McBroom, R. E.; Olmstead, W. J.; Phin, A. W.; Reeves, H. W.; Stark, S. E.; Thomas, W. G.; Thurston, G. B.; Urie, E. H.; Wilkes, J. B.

Jurisprudence Only—McCarthy, T. G.

Anatomy—Aunger, Wm. R.; Barker, H. E.; Blackburn, Wm. J.; Box, Edward M.; Brownlow, R. N.; Butler, R. R.; Claman, H. A.; Davis, Lloyd; Galasky, H. A.; Gerrie, J. W.; Gowda, F.; Hainer, Wm. E.; Hawlin, Geo. M.; Holt, S. W.; Husband, C.; Kennedy, E. L.; Konkle, H. R.; Langstrath, R. S.; Morrow, A. B.; McCarthy, T. G.; Portigal, S. L.; Powell, H. B.; Priest, Marian; Roulston, F. M.; Smith, Donald; Snodgrass, Wm. G.; Somerville, A. A.; Stodgell, F. J.; Wetmore, S. K.; Whitaker, G. W.; Whitman, O. B.

Physiology and Histology—Blackburn, Wm. J.; Davis, Lloyd; Dewis, G. M.; Dougall, J. H.; Galasky, H. A.; Gerrie, J. W.; Gowda, F.; Holt, S.; Husband, C.; Kennedy, E. L.; Leith, A.; Little, R. V.; Morrow, A. B.; Porter, C. A.; Powell, H. B.; Smith, Donald; Snodgrass, Wm. G.; Wilkes, J. B.

Physiology Only—Brock, J. F.; Carman, H. A.; Carmichael, L. D.; Davis, O. J.; Dempster, J. C.; Grant, J. A.; Greenburg, N. H.; Hare, G. C.; Hasleton, L. D.; Hoag, J. R.; Irwin, A. W.; Lindsay, J. C.; Robb, H. M.; Tilson, J. E.; Toll, C. E.

Histology Only—Aunger, Wm. R.; Barker, H. E.; Box, E. M.; Brownlow, R. N.; Butler, R. K.; Claman, B. C.; Endicott, C. S.; Hawlin, G. N.; Johnson, G. M.; Kingman, Geo.; Konkle, H. R.; Langstrath, R. S.; Portigal, S. L.; Priest, Marian; Roulston, F. M.; Skinner, C. L.; Stodgell, F. J.; Wetmore, S. K.; Whitaker, G. W.; Whitman, O. B.

Anaesthetics—Blackburn, Wm. J.; Butcher, E. C.; Connell, E. W.; Dougall, J. H.; Endicott, C. S.; Holt, S. W.; Hoag, J. R.; Kennedy, E. L.; Kerr, R.; Montgomery, A. R.; McBroom, R. E.; Olmstead, W. J.; Phin, A. W.; Polack, I. G. G.; Porter, C. A.; Squire, G. C.; Stark, S. E.; Stett, M. L.; Thomas, W. G.; Wilkes, J. B.

Materia Medica Therapeutics—Adams, Lois; Addinell, W. E.; Bagnall, Stanley; Blackburn, Wm. J.; Butcher, E. C.; Carman, H. A.; Davis, O. J.; Dempster, J. C.; Dougall, J. H.; Endicott, C. S.; Grant, J. A.; Greenberg, N. H.; Hainer, Wm. E.; Hare, Geo. C.; Hasleton, L. D.; Holt, S. W.; Hoag, J. R.; Irwin, A. W.; Kennedy, E. L.; Leith, J. C.; Lindsay, J. C.; Porter, C. A.; Phin, A. W.; Robb, H. M.; Snodgrass, Wm. G.; Squire, G. C.; Toll, C. E.; Tilson, J. E.; Wilkes, J. B.

Therapeutics Only—Cowan, Flora; Cross, Sydney; Hughes, R. W.; Kennedy, H. J.; Milburn, Wm. B.; McBroom, R. E.; Stark, S. Ellen.

Prosthetic Dentistry, etc., and Orthodontia—Addinell, W. E.; Blackburn, Wm. J.; Butcher, E. C.; Cross, S.; Dougall, J. H.; Endicott, C. S.; Hainer, Wm. E.; Hoag, J. R.; Hughes, Wm. R.; Hutzulak, P.; Kennedy, H. J.; Kerr, H. R.; Milburn, Wm. B.; Montgomery, A. R.; McCarthy, T. G.; Olmstead, W. J.; Phin, A. W.; Porter, C. A.; Stark, S. E.; Thomas, W. G.; Thurston, G. B.; Wilkes, J. B.

Prosthetic Dentistry Only—Cowan, Flora; Adams, Lois.

Orthodontia Only—Connell, E. W.; Reeves, H. W.

Medicine and Surgery—Adams, L.; Addinell, W. E.; Blackburn, Wm. J.; Butcher, E. C.; Connell, E. W.; Cowan, Flora; Cross, S.; Dougall, J. H.;

Endicott, C. S.; Gerrie, J. W.; Hainer, Wm. E.; Hoag, J. R.; Hughes, Wm. R.; Hutzulak, P.; Kennedy, E. L.; Kennedy, H. J.; Milburn, Wm. B.; McBroom, R. E.; McCarthy, T. G.; Olmstead, W. J.; Phin, A. W.; Porter, C. A.; Reeves, H. W.; Stark, S. E.; Thomas, W. G.; Thurston, G. B.; Urie, E. H.; Wilkes, J. B.

Physics, Chemistry and Metallurgy—Blackburn, Wm. J.; Brock, J. F.; Carman, H. A.; Carmichael, L. D.; Dempster, J. C.; Dougall, J. H.; Gerrie, J. H.; Gowda, F.; Grant, J. C.; Greenberg, N. H.; Hare, G. C.; Hasleton, L. D.; Holt, S. W.; Hoag, J. R.; Husband, C.; Irwin, A. W.; Kennedy, E. L.; Leith, A.; Lindsay, J. C.; MacDonald, J. A.

Operative and Preventive Dentistry—Adams, L.; Addinell, W. E.; Blackburn, Wm. J.; Butcher, E. C.; Connell, E. W.; Cowan, F.; Cross, S.; Dougall, J. H.; Endicott, C. S.; Hainer, Wm.; Hoag, J. R.; Hutzulak, P.; Kennedy, E. L.; Kennedy, H. J.; Milburn, Wm. B.; Montgomery, A. R.; McBroom, R. E.; McCarthy, T. G.; Olmstead, W. J.; Phin, A. W.; Porter, C. A.; Reeves, H. W.; Stark, S. E.; Thomas, W. G.; Thurston, G. B.; Wilkes, J. B.

Physics, Chemistry and Metallurgy—Porter, C. A.; Powell, H. B.; Robb, H. M.; Snodgrass, Wm. G.; Tilson, J. E.; Toll, C. E.; Wilkes, J. B.

Metallurgy Only—Bagnall, Stanley; Butcher, E. C.; Stark, S. E.

Advice Given in 1840 by Eleazar Parmly



T No. 11 Park Place, New York City, one hundred years ago, Eleazar Parmly conducted a dental practice. Parmly was the Editor of the American Journal of Dental Science, in association with Chapin Harris, M.D., of Baltimore.

Advice given by Parmly was "to urge on every individual the necessity of aiming at the prevention of disease This is a subject which demands the attention of parents, and those who are entrusted with the care of children. It should be the first consideration of every person so situated, to habituate children to clean their teeth, at least twice a day, and when this practice has been once adopted, it will be continued as a matter of course. Besides this, from the age of six to twelve years in particular, a dentist should be consulted three or four times a year, and at a later period, once or twice for the purpose of examining the teeth, and counteracting by the timely removal of such causes as may produce disease, any mischief which is likely to take place." These words were written eighty-six years ago, but sound as modern to-day as anyone could desire.

Parmly also reported in 1840 that in London, Paris and other large cities of Europe, the principal academies and boarding schools were regularly attended by dentists, for the purpose of having the children's teeth examined, and of performing such operations as they might require when necessary and expressed the view that "if proper care and attention be not paid during the time teeth are shedding, a countenance, however naturally beautiful, may, in consequence, be totally disfigured; and it frequently happens that an unpleasing countenance, although united to an amiable mind, produces a dislike that is not easily overcome."

Ontario Dental Association

REPORT OF THE NOMINATING COMMITTEE AND ELECTION OF OFFICERS.



THE Nominating Committee report was presented by Dr. Ross Thomas. Officers for the year were elected as follows:

Honorary President: Dr. J. C. Devitt, Bowmanville.
President: Dr. J. A. Bothwell, Toronto.

Vice-President: Dr. A. W. Winnett, Kingston.

Archivist: Dr. C. A. Kennedy, Toronto.

Secretary-Treasurer: Dr. Fred J. Conboy, Spadina House, Toronto.

Board of Governors:

Dr. W. B. Amy—3 years, Dr. W. L. Chalmers—3 years, Dr. E. R. Zimmerman—complete Dr. Winnett's term, Dr. A. W. Ellis, Dr. O. Spence Clappison, Dr. T. F. Campbell, Dr. Harold Clark.

Oral Hygiene Committee:

Dr. A. W. Ellis, Dr. R. J. Reade, Dr. J. C. Livett, Dr. F. C. Husband, Dr. H. E. Eaton.

The members of the Nominating Committee were:

Dr. F. P. Moore, Hamilton; Dr. R. J. Sprott, Barrie; Dr. M. S. Hawkins, Port Hope; Dr. Ross Thomas, London; Dr. Jack O'Flynn, St. Catharines.

Dental Practitioners' Course



SEVENTY-EIGHT graduates registered at the annual Dental Practitioners' Course in the Faculty of Dentistry held from 13th to 18th of September, 1926. The registrants included one from England, 11 from United States and 16 Canadian dentists. The English dentist was Miss Bessie H. Poole, graduate of the department of Dentistry of the University of Manchester. The dentists from the United States were:—

Drs. P. W. Allen, Grove City, Penn.; S. E. Armstrong, New Haven, Conn.; C. G. Morsheimer, Rochester, N.Y.; T. C. Blatau, Rochester, N.Y.; A. M. Delehantry, Lapeer, Mich.; J. H. Dewey, West Palm Beach, Fla.; A. Donawa, Washington, D.C.; M. H. Greene, Penacook, N.H.; H. G. Mayer, Indianapolis, Ind.; R. Porter, Oil City, Pa., and J. D. Reynolds, Marietta, Ga.

The Canadian registrants were:—

Drs. H. C. Arnott, Oshawa; H. L. Ballantyne, Uxbridge; F. E. Bell, Iroquois Falls; C. L. Brady, Simcoe; A. E. Joselin, Hamilton; H. G. Learovd, Sutton West; E. Norman, Toronto; S. Perlman, Toronto; H. A. Saunders, Port Arthur; W. J. Schmidt, Kitchener; P. St. C. Smith, Toronto; E. P. Smith, London; E. A. Storey, Sarnia; G. M. Sutherland, Toronto; C. A. Tanton, Niagara Falls; A. J. Thomas, Victoria, B.C.

Dentistry

Extract from The Canadian Red Cross.



FIVE hundred years before Christ, dentistry was referred to as a distinct vocation and there are evidences that dentistry in a crude way was practised by the Egyptians and probably by the Hindus. We know this to be a fact because the teeth in the skulls of these ancient people show evidence of dental work. The Greeks and the Romans would not allow gold to be buried with a body, but they had one exception in the law and that was when teeth were wired together with gold.

Up to about 1700 most of the operations upon the teeth were done by barbers or surgeons. About the middle of the last century, however, it was found that there was a distinct demand made for a kind of skill not possessed by the surgeon. The art of dentistry has developed the highest type of skill, but successful results can be procured only by competent men. Poor dental work is almost certain to be expensive in the long run.

Dentistry deals with a very important part of the human body, with structures which have an exceedingly vital relationship to the health of the body as a whole. Besides taking care of the restoration of teeth decayed or lost, dentistry includes the construction and mechanism necessary to restore perfect speech to sufferers from cleft palate, the construction of splints for broken jaws and the correction of misplaced or irregular teeth.

The mouth is the vestibule of the body. It must receive all the food which goes to nourish and strengthen the human body from birth till death. The mouth is the easiest portion of the body, without exception, to contaminate, unless it receives the best of care. Good care of the temporary or first teeth is as important as good care of the permanent teeth because the soundness of the permanent set depends to a considerable degree on the care given the temporary teeth.

Neglect of the health of the mouth may imperil the health of the whole body. In order to develop the most perfect manhood and womanhood physically or mentally, it is absolutely necessary that each part of the human body be kept in a sound condition, with all the vital parts in good working order. A tremendous sacrifice of human life results on account of neglect of children's teeth by parents. It is a pity that parents neglect their children's teeth and mouths. How simple to train a child to the use of the tooth brush. It requires so little energy and so little time. It is said that only one child in 300 uses a tooth brush the country over. Education is by far the most important instrument than can be evoked in the future to bring about changed conditions in the personal hygiene of our people.

Unqualified Dentists

GEORGE CECIL, PARIS, FRANCE.

CCORDING to a Paris dental surgeon, who has acted as *locum tenens* for a southern colleague, a scandalous state of affairs exists in provincial dental circles, which for some time past have been singularly ill-served. Unqualified dentists who in any case are far too young to possess the necessary practical qualifications have failed to satisfy their patients, the most long-suffering amongst whom complain bitterly of the treatment to which the local "practitioner" has subjected them. The so-called dentists are ignorant of the jaw and its anatomy; their fillings, owing to the decayed portion of the tooth not being properly removed, cause more pain than relief. The rural *dentiste*, in short, is a menace to all who seek a cure at his incapable hands.

Matters have been brought to a head by the experience which has just befallen a Canadian visitor to France. Persuaded into renting a country house for the winter, on the Riviera coast, where all is warm and bright, the temporary lord of the manor had trouble with a neglected tooth which was too far gone for anything but extraction. He at first thought of taking the train for Nice, where thoroughly capable practitioners are to be found,—men who inspire the utmost confidence. But seized with a paroxysm of pain, he surrendered his mouth to a travelling unqualified dentist, who, making a tour of the district, had (as the French say) "descended" at the village inn. The operator, unshaven and with finger nails which evidently had not made the acquaintance of soap and water for some days, assured the patient that the removal of the offending tooth was a simple matter. The sufferer took courage.

A few seconds later, he more than repented his rash decision. For the so-called dentist, in addition to dispensing with the customary injection, so bungled the operation that the aid of a Nice specialist immediately had to be sought, the victim having to put up with an hour of additional torture on the journey. Retribution, however, has overtaken the incompetent *dentiste*. The law having stepped in, it transpires that the offender's sole qualification for practising dentistry rests on six months' work as mechanic in the employ of a dentist who also had not qualified. . . . Under the circumstances, it is not surprising that no injection was administered.

Both master and man are now awaiting trial on a charge of practising without going through the formality of qualifying in the usual manner. Meanwhile, the Government, bent (rather late in the day) on reform, is ordering an enquiry into the prevailing conditions. High time, too!

Amalgam Fillings as a Possible Source of Mercurial Poisoning

CHARLES F. BODECKER, D.D.S., F.A.C.D.

*Professor of Dental Histology and Embryology, Columbia University
Dental School, New York, N.Y.*



THE close relationship which the teeth bear to the general health has been proven in numerous cases and, in consequence, the medical profession is liable to blame infected teeth for many ailments. Some patients have been cured by the removal of offending teeth, but doubtless this matter has been carried to the extreme in numerous cases.

And now news comes from Germany which will send a wave of despair through the dental profession and may also disquiet the public at large.

Professor Alfred Stock,* Director of the Kaiser Wilhelm Institute of Chemistry in Dahlem, Berlin, believes that amalgam fillings cause a stealthy, chronic form of mercurial poisoning, which manifests itself in enervation, neurasthenia and a weakening of the memory.

Before going into the details of Stock's report, I wish to say that we must not be hasty in forming our conclusions. The stakes are too large to be lightly cast aside, nor should we blindly accept the verdict of one man in a matter of such vital importance. If amalgam as a filling material would have to be discarded, we can safely say that the mass of the people would not be able to have any permanent dental work done, because gold inlays are still a luxury. On the other hand, if Stock's contention should prove to be true, then amalgam as a filling material must go, or the technique must be so modified as to make it safe.

PROF. STOCK'S EXPERIMENTS.

Professor Stock, a noted chemist, has for many years, in the course of his experiments, been in constant contact with mercury. During this time he suffered from various symptoms, which increased as time went on, until he despaired of continuing his work. His memory, which was previously excellent, seemed to become weak; lack of energy set in as well as an inability to solve mathematical problems. In 1923, the electrically driven ventilation plant was stopped on account of the expense of running the motor. From this time on the symptoms appeared in aggravated form and finally mercurial poisoning was diagnosed, not only in Stock, but in all who worked in this laboratory.

*Stock, Alfred, Zeitschrift fuer angewandte Chemie, No. 15, 1926.

The air in these rooms was analyzed and found to contain only a thousandth to a hundredth of a milligram of mercury per cubic meter. Air having 12 milligrams of mercury vapour is considered saturated; we therefore see that the quantity found in the analysis of the air in Stock's laboratory was infinitesimal. As man consumes approximately one-half a cubic meter of air per hour, we note that the amount of mercury vapour inhaled by Stock and his assistants was minute. And yet this minute quantity did cause a slow poisoning, even though it was so difficult to diagnose.

And here the possibility appealed to Stock that dental amalgams may likewise be a source of mercurial poisoning. He, therefore, experimented with both copper and silver amalgam fillings and found that, if extracted teeth containing fillings are heated to about 30° C. (body temperature is 37° C.) considerable fumes of mercury are given off. *It is to be noted that this ensued not only from new and freshly mixed amalgam, but also from old fillings.*

These are the experiments which have alarmed the German public, and it is imperative that an able chemist should corroborate these findings. After the exact amount of mercury vapour given off at body temperature has been defined for a specified mass of amalgam, a toxicologist must decide whether such a quantity can affect the health of an individual. It is also of vital importance to discover whether the formation of mercury vapour continues for years after the placing of the filling, for if this is the case, we must take all the amalgams in the mouth of the patient into account.

One specific case is cited by Stock: A colleague, suffering from continued headaches, had a large amalgam filling, around which the gingiva was considerably inflamed. Some time after this filling was removed, the local and general symptoms disappeared.

In answer to this case, I say decidedly and emphatically that we must not jump to conclusions, particularly not with such scant proof! I will wager that every dental practitioner, who has a pair of eyes and uses them, has noted marked gingivitis around many a large amalgam filling. But the cause of this inflammation of the gingiva is not the amalgam nor the mercury; it is the result of a lump of metal overhanging the margin of the cavity, because when this is carefully trimmed away and smoothed, the irritation subsides.

The dental profession of Germany, headed by Professors Schoenbeck, Schroeder and Ritter, do not accept Stock's contention. They have not, in consequence, modified their use of amalgam.

Even though this matter may pass off with a simple scare, it will serve to show the importance of care in the use of mercury by the chemists and physicists. It will also sound a note of warning to dental practitioners to thoroughly condense amalgam fillings, and to remove every

trace of excess mercury. This can best be done by the use of annealed gold pellets for they then take up the mercury more readily.

Whatever the future may bring, we must await the results of the above described chemical tests. In the meantime let us keep both feet on the ground and not allow the pendulum of fadism to swing from one extreme to the other.—*Dental Items of Interest.*

Old Time Dentists' Cards

BY C. EDGAR THOMAS.



IN the long ago when those picturesque signs, which by overhanging our shops beautified our streets, had yet to be displaced by street numbering, many tradesmen indulged in what we should probably now term an extravagance—the trade or business card. These had nothing in common with the plain, modest business card of to-day: in many instances they were gorgeous and costly affairs, designed by famous artists—Hogarth and Bartolozzi did not disdain the work of executing tradesmen's cards—and engraved with rare skill. Not infrequently they were as large as folio sheets, and were used for the purpose of rendering accounts. And their use was not confined to trade folk solely, for professional men such as dentists, surgeons, dancing and drawing masters, etc., issued them. The trade card began in a small way in the seventeenth century, and, by the beginning of the nineteenth, it was already in a decline. So that it was in the eighteenth century—about 1720 to 1770—that it enjoyed its greatest vogue. Primarily, of course, trade cards were an advertisement, but one in which art was delicately welded to commerce. Many excellent specimens are in existence, and they are diligently sought for by collectors, and richly prized when obtained. Later the design of the trade card sadly deteriorated—"the lettering still retained a great deal of the old charm, but the tradition soon got overlaid by the affectations of the Victorian era."

It is remarkable that no book has hitherto been published dealing with tradesmen's cards, but that omission has now been remedied by Mr. Ambrose Heal, whose "Tradesmen's Cards of the Eighteenth Century" has just been issued by the well-known firm of Messrs. Batsford, of Holborn, at the price of two guineas. It is a handsome volume containing, apart from much historically informative matter, full-page reproductions of 101 cards.

Naturally, one looks first of all for something in connection with the old-time dentist, and one is not disappointed. Plate No. 26 is a

handsome reproduction of the professional card of Law, the dentist. It is an exquisite specimen of design, orderliness, and refinement, and measures 4in by 3in. It was executed by the celebrated Machy, and consists of an oval medallion—in which are the particulars—surmounted with the Royal coat of arms, with the Prince of Wales' feathers and motto at the bottom. The whole is contained in a floriated border. It reads:

LAW

DENTIST

No. 10, St. Alban's Street

PALL MALL.

Pupil of the late Mr. Rae,
Surgeon Dentist to His Majesty
and His Royal Highness
the Prince of Wales.

FAMILIES

attended by the Year.

Another "Surgeon Dentist," who also attended families by the year, was "Samuel Darkin ye Elder, Operator of Teeth," together with "Samuel Darkin the Younger, Bleeder and Operator of Teeth; also Cups at the Sign of the Bleeder and Star." Unfortunately, the trade card of this partnership is not reproduced. Considering that in the eighteenth century a large amount of artificial teeth manufacture was carried on by both qualified and unqualified folk, it is a little disappointing not to find included in Mr. Heal's collection a trade card of this fraternity. There must have been several. Is it possible that none is extant?—*The Dental Magazine*.

Next Meeting American Dental Association



THE 1927 meeting of the American Dental Association will be held in the City of Detroit, Michigan. The time of meeting has not yet been decided. The President is Dr. Henry L. Banzhaf; the President-elect, Dr. R. H. Volland, and the General Secretary, Dr. Otto U. King.

Children's Dentistry in General Practice*

BY H. S. STAIN,

Dental Surgeon, Adelaide.



THE remarkable and almost incomprehensible paucity of papers published in the dental journals on this particular subject was probably my greatest incentive to endeavour to raise an apparent lack of interest in this important branch of dental science. Whilst we have numerous writers treating this subject from the statistical side, these statistics are usually made up from amongst children from school-going age and upwards. In dealing with children we must not lose sight of the fact that we are dealing with an important section of the community, because they are to become our future citizens. Any person who has not a sincere and deeply rooted affection for the child is positively abnormal, and it is our bounden duty to study their conditions and endeavour to the best of our ability to save them from pain and trouble. There is a large and increasing need for *good* children's dentistry, not in school clinics, but in private practice. Poor children's dentistry usually brings in its train much unnecessary suffering and mal-occlusion. We must prepare ourselves to do good constructive work from the earliest period at which we can induce parents to bring their children and endeavour to disabuse the minds of the laity that, as the deciduous teeth will eventually be lost, there is no necessity for bothering with them.

This idea the writer believes to be attributable to a number of dentists refusing to care for the youngest children, and, unfortunately, the parents have no definite means of ascertaining who are to be classed among the good and bad children's dentists. The necessity and importance of conscientiously dealing with these young patients must be recognized early in practice. When a crying, hysterical child is first presented for treatment the average busy practitioner looks askance at the child and probably condemns said child to a place where, in the hereafter, one expects to meet most of one's earthly friends. The younger the child the more difficult is the problem, but after one has learnt and exercised a little patience, and probably called up a reserve of kindness he did not know himself possessed of, and successfully accomplished some constructive work, he is quite justified in throwing out his chest and expressing entire satisfaction for his effort. When a child presents for first treatment, he is usually a little sufferer, and, if so, will be only too willing to be relieved of his pain. Do this in the

*Courtesy of the Australian Dental Summary.

most unostentatious manner possible, being content to stop the ache. If successful in this, and having thus gained the patient's confidence, it is truly surprising what can be accomplished at subsequent sittings. At heart we all love children, and, having once relieved a young sufferer, will be ambitious to try again. Endeavour to be kind and considerate in all your dealings with young children, else you frighten them, then neither you nor any practitioner will ever again be able to gain their confidence and esteem. It is an established psychological fact that early experiences have a more or less permanent effect. This applies very particularly to dental operations. The first two or three appointments should be short and must be thoroughly painless, because after the impression that dental operations do not hurt, almost anything can be done subsequently. The child's attitude will be determined by these first few experiences, therefore let me emphasize that everything possible should be done to gain and keep its confidence. The parent usually accompanying the child, make a very careful and thorough examination, taking plenty of time so as to impress the parent with the importance of the work. If this be carried out in a haphazard manner it may give an unfavourable impression of the dentist's sincerity and ability. Having made a thorough examination and diagnosis, we are then able to gauge the time and approximate cost of the work. Any teeth showing the slightest sign of caries should be treated as early as possible with AgNO_3 , preferably Howe's solution. AgNO_3 is generally accepted as a specific for dental caries, but personally my clinical observations lead me to believe the results are rather transitory in some cases and very often require reapplications. AgNO_3 , when applied to the dentine, enters into chemical combination with the albumen of the dentine matrix, forming an insoluble silver albuminate, resulting in a silver deposit remaining in the dentinal tubuli.

When a cavity is regarded as being too large for AgNO_3 treatment and filling, a definite cavity preparation technique is just as necessary as in adults, but only after making due allowance for the shape of the cavity in deciduous teeth. In all cases every particle of decay must be removed. This extensive removal of caries very often causes involvement of the pulp. In such a case two courses are open. Pulp conservation depending on pulpal condition, and devitalization. This latter course will probably cause a little head shaking. But here let me ask: In a child of, say, two or three years, the first and second molars should normally function for from seven to nine years, what conservative dentist would leave carious dentine in close proximity to the pulp for this length of time? Owing to the construction of deciduous teeth with their large pulps and constricted root canals, a carious tooth usually becomes infected pulpally with consequent alveolar abscess, and fistula on the gum in a few weeks. When a child has several such teeth, the

toxic effect cannot be estimated, but must be very harmful to the well-being of the child. These foci may remain for years, lowering resistance to disease, and often involving tonsils, salivary glands, or the lymphatic glands of the neck. It appears to me that a faulty calcium metabolism may in some measure be due to malnutrition as a direct result of these conditions. Pulpal infections and abscesses in deciduous teeth may be caused in two ways, viz., bacterial invasion following caries, or death of pulp from a blow. Owing to the larger dentinal tubules a pulp in a deciduous tooth becomes infected very much earlier than in a permanent tooth. This being the case, in the writer's opinion pulp capping after exposure in deciduous teeth is absolutely contraindicated. If in removing the whole of the carious dentine a pulp is exposed either devitalize (cobalt mixed with dentalone or eugenol for twenty-four hours) or put in a dressing of zinc oxide and eugenol for two or three weeks, when it will be possible to open right into pulp chamber.

Wash out thoroughly with syringe, dry cavity, and insert a loose dressing of Phenol compound. This should be left in position for some days, and after cleaning out the pulp chamber thoroughly with a Black's spoon or large rose bur, dress with Tri-cresol and formalin for one week. On return isolate the tooth, remove dressing; dry with hot air and wash out with hydrogen peroxide H_2O_2 . If there is no effervescence present fill pulp chamber with alum paste and seal with G.P. If any effervescence is present after H_2O_2 , repeat formo-cresol treatment. Dr. Jordan, of Los Angeles, recommends this treatment, which has proved a boon in my practice.

An abscessed condition exhibiting fistula or gum-boil usually proves more difficult, but the same treatment is recommended. If unable to clear up these infections, or if there are several in the same mouth, and the child exhibits every sign of auto-intoxication, do not hesitate to extract. The teeth which usually exhibit bacterial infection are the molars, and these are the teeth it is most essential to retain if possible. They are the masticatory organs of the deciduous dentition, and if retained and used in that capacity exert a profound influence in promoting the development of the dental arches by a normal functional mechanical stimulus. The too early extraction of the deciduous teeth is responsible for many cases of mal-occlusion, such cases usually exhibiting crowded arches and overlapping of teeth. On the other hand, many cases for the orthodontist are certainly caused by the too long retention of these teeth, these two factors alone indicating most conclusively the necessity for the general practitioner carefully studying conditions of the oral cavity in early childhood. Cavity preparation differs but little from the technique employed in permanent teeth. Occlusal cavities should be extended along each fissure. Proximal cavities

should be extended over occlusal angle in order to obtain sufficient retentive form; see that all fragile walls are carefully chiselled and smoothed, and that every particle of decay is removed. Materials for filling deciduous teeth are varied, but in the writer's practice all have been eliminated for general work excepting copper amalgam. Copper amalgam can be utilized to fill every requirement for a filling in temporary teeth. Proximal cavities can be built up with a large bell-shaped contact point in a quite satisfactory manner without a matrix, but owing to its comparatively slow setting properties it is essential that parents be instructed only to give food in a liquid form for the rest of the day. Whilst dealing with proximal cavities, one often finds two proximal cavities in adjacent teeth. In these cases, particularly the deciduous molars, it is advisable to fill the mesial cavity in the second molar first. Do not build out any contact point and polish before inserting distal filling in first molar; in this case building up a large contact point.

This will preserve the space, protect the interstices, and when the first molar is lost there is no overhanging contact in second molar to interfere with the erupting first permanent bicuspid.

This paper would not be complete without some mention being made of food factors and their effect upon the teeth. To secure the greatest benefit from a correct diet, we must commence with the expectant mother. The dentist is probably not in a position to be asked by and give advice to pregnant women who consider, and rightly so, that their medical adviser should shoulder this burden. But how often and how many medical men do place their patients in this condition on a suitable mineral diet. If the diet is lacking in calcium, the reserve store in the body is called upon to meet the demand. With the generally increased mineral need the diet should consist largely of green vegetables (raw and cooked), fruits, with butter, eggs, etc. After birth the diet of the child is the first important consideration. Natural feeding of infants should continue with rare exceptions during the first nine months. Only in cases of illness of the mother should a child be bottle-fed. The child who derives his nourishment from his mother usually has strong muscles and well-shaped jaws, has a greater immunity to disease, and is less liable to contract the ever-increasing disease "rickets." Mushy and pappy prepared foods, which cling to the teeth, are a great source of evil, and although biscuits and the like may contain body-building properties, it is not that we object to what they contain as to the form in which they are given. Cereals can be given just as easily in the form of crusts and toasts as in the form of mush. Green vegetables and fruits are a very great factor in supplying mineral wants in growing children.

Comparison of Researches of Box and Gottlieb by British Authorities



IN the May 1st issue of *The British Dental Journal* (Vol. XLVII., No. 9), A. T. Pitts, D.S.O., L.D.S., M.R.C.S. Eng., has given a very complete summary of Dr. Gottlieb's researches, as reported in "Schmutzpyorrhoe, Paradentalpyorrhoe, and Alveolaratrophie," 1925.

Pitts concludes his summary as follows:

There is a remarkable parallelism between Gottlieb's views and those of H. K. Box, in his "Studies in Periodontal Pathology."

Box, like Gottlieb, describes the downgrowth of epithelium into the pockets in chronic general periodontitis, and regards it as a common accompaniment of pocket formation. Indeed, Box considers that this epithelial proliferation is a factor of great importance in this respect. He differs, however, from Gottlieb in his interpretation of this process, and looks upon it as essentially reparative, an attempt to reduce the inflammation to a chronic, non-ulcerative type. Gottlieb, as we have seen, looks upon the epithelial proliferation as an integral part of the mechanism of eruption, but which, in the presence of inflammation, instead of subserving a normal function, goes astray and leads to the formation of a pathological pocket. Their agreement as to the existence of this process is, however, of greater significance than the divergence of their interpretation of its nature, and helps to strengthen the value of their work. Similarly, with regard to the bone changes, there is a striking correspondence between the diffuse alveolar atrophy of Gottlieb and the rarefying pericementitis fibrosa described by Box. Both occur in the deeper part of the alveolar bone, and may be independent of any changes in the soft tissues or of any marginal changes in the bone. The process, as Box describes it, is a chronic and progressive lesion of the periodontal membrane which results in the rarefaction of the alveolar bone. It consists histologically of the formation of a new tissue in the membrane which both changes the normal structure of the membrane and extends into the bone, replacing it by a loose, fibrillar tissue with subsequent formation of zones of osteoid tissue. It is not a sequel to inflammation of the gingival tissues, but occurs independently. Its association with superficial changes in the soft tissues is common, and leads to the establishment of a complex form of periodontitis. Box considers that the presence of rarefying pericementitis fibrosa is the paramount causative factor in the production of what he terms complex or infective periodontitis. The lesion characterizes itself clinically by leading to loosening of the teeth. Like Gottlieb, he regards divergence from normal mobility as a diagnostic sign of great import-

ance of the presence of rarefying pericementitis fibrosa. It is impossible not to believe that the diffuse alveolar atrophy of Gottlieb and the rarefying pericementitis fibrosa of Box are identical conditions. The fact that they both approach their consideration of these changes from different viewpoints helps to strengthen the value of their conclusions. One must admit that Gottlieb's views, attractive though they are, are somewhat hypothetical. Yet they represent an important contribution to the pathology of pyorrhea, and one that no worker in this field can afford to ignore.

The Lancet, in a recent issue, in commenting upon Dr. Gottlieb's views relating to the Pathology of Pyorrhea, states that:

Gottlieb does not discuss in this book the morbid histology of diffuse atrophy, but it is evident that the primary change must be in the periodontal membrane and that the condition must be essentially one of bone absorption and its replacement by fibrous tissue. H. K. Box, who describes a similar condition in his valuable studies on periodontal infections, has given an elaborate account of the morbid anatomy of what is apparently the same condition. The name given by him to the condition is rarefying pericementitis fibrosa. It is a process of bone absorption both by halisteresis and lacunar absorption, and replacement of the bone absorbed by a low grade of fibrous tissue. Like Gottlieb, Box lays stress on the fact that it may occur as a primary lesion, and that it leads to loosening of the teeth. There are further parallels between the work of the two observers. Both describe the down-growth of epithelium into the pockets. Box, however, regards it as a concomitant of the infective process and essentially an attempt to repair the ulcerative process. Gottlieb looks upon it as a part of the normal mechanism of eruption, though in pyorrhea as a result of a morbid stimulus the epithelial proliferation may be excessive and aid in the formation of a pocket. Box studies the appearances from the standpoint of morbid histology, while Gottlieb is more concerned with the mechanism of the pathological processes. Though they differ in their interpretation of the significance of the changes, the fact that each has independently observed and described the condition is significant. It may be hoped that their researches will stimulate other workers to study the eruptive process, for on the confirmation of Gottlieb's heterodox views on eruption the validity of his conception of the pathology of pyorrhea must depend.

* * *

The above comparisons of the researches of Box and Gottlieb will prove of great interest to Canadian Dentists, and illustrate in a striking manner the recognition in scientific circles of Canadian research in this field.

ORAL HEALTH hopes to publish in the near future a more complete analysis of the outstanding work of these two scientists.

The Prevention of Colds

Nature's Cafeteria permits man to pay the price and take what he chooses.—A. B. Jamieson.



HE "common cold" is a universal destroyer of comfort and efficiency and the cause of vast economic losses, and while it is not a definite disease entity it is a condition which, in most cases, can be prevented by hygienic measures.

If you scatter a handful of corn on the surface of a metalled road it will not grow, because the soil is too hard and the conditions are generally unsuitable. Plough up a bit of the same road, water it and add a little fertilizer and your corn will grow there as well as anywhere.

The upper respiratory tract constantly harbours a multitude of bacteria of many kinds but, in perfectly healthy persons, these produce no pathologic symptoms whatever, because the soil is not suitable for their growth. Let the body resistance be lowered, by toxæmia or other causes, or the local conditions of the nasal mucous membranes rendered favourable for bacterial growth, and infection promptly ensues.

There are many conditions which lower the body's resistance, among which are overwork, too little sleep, underfeeding or improper feeding, worry, lack of exercise, focal infections of various kinds (teeth, tonsils, prostrate, etc.), and—probably the most common of all—toxaemia due to deficient elimination of wastes by the bowels, kidneys, skin and lungs.

There are also a number of conditions which cause hyperæmia and turgescence of nasal mucous membranes and irritation of those of the throat, larynx and trachea. Among the former the same old auto-toxæmia from deficient elimination is one of the worst offenders; sexual overactivity sometimes causes it, and so does *local* chilling of small areas of the skin. Dust, smoke, fumes, pollens and other like things sometimes cause irritation all the way down. Protein sensitization, or anaphylaxis is sometimes the etiological condition.

These suggestions indicate the rational method for preventing colds, under ordinary conditions.

1.—Avoid overwork and loss of sleep whenever possible—and it usually is possible if we develop a sound and proper sense of relative values.

2.—Eat enough, but not too much. Take plenty of milk, fresh fruits and green, leafy vegetables.

3.—Take a reasonable amount of exercise, preferably out of doors and in the sunshine (when there is any).

4.—Have all sources of focal infection cleared up.

5.—Secure adequate activity of all the organs of elimination. The bowels should move two or three times a day; enough water should be drunk (4 to 6 quarts daily) to flush the kidneys; the skin should be kept active by daily bathing and the lungs by plenty of deep breathing.

So much for general hygiene; now for the local factors.

6.—Accustom the skin to changes of temperature by exposing it to warm and cold air and water daily, and avoid *local* chilling—as by a “draft” on some circumscribed part of the body. *General* chilling of the surface rarely results in “colds.”

7.—If you are sensitive to certain pollens or other proteins, have the condition treated by antiallergic vaccines or avoid the offending substances or both.

8.—Keep out of dust, smoke and irritating gases as much as possible.

—*Clinical Medicine.*

ADVICE TO PATIENTS.—The giving of advice to patients is always considered by the dentist to be worth something to the patient. To suggest to the dentist the question if such advice was worth anything, he would certainly resent the suggestion. He would say that after years of practice and experience it would be worth something.

Dentists should and do consider such advice worth something, and if so, why is it that so many give such advice freely and receive no remuneration?

If it is worthless, charge accordingly; but if it is a valuable consultation, a sufficient fee should be charged. The time has gone by when free examination should be given. “The worker is worthy of his hire.”—C. A. K.

THE EFFECT OF SOIL UPON THE TEETH.—In an addendum to the annual report of the County Medical Officer of Health for Norfolk, some interesting figures are given in relation to dental irregularities. The figures go to show that the percentage of cases of narrowing of the arch among school children is very definitely higher in one part of Norfolk than in the remainder. The explanation given is that in the portion of the county in which the percentage is high the soil is mainly clay, and that the clay soil conduces to nasal catarrh, and nasal obstruction, an admittedly important factor in the ætiology of dental irregularities.

In the remainder of the county the soil is chalk, the two districts being quite sharply divided one from the other; and there appears to be an equally marked difference in percentage of cases of irregularity of the teeth in the two portions of the county.



PUBLIC HEALTH SERVICE

FOR THE PEOPLE ~ BY THE STATE

This Department is Edited by
FRED J. CONBOY, D.D.S.,

Director of Dental Services, Province of Ontario.



The Ontario Dental Health Day

Wednesday, October 20th, 1926.



HIS dental health educational effort will be a great success. The interest taken in the movement by the different lay agencies far exceeds our most optimistic anticipations, and the members of the Profession are now hard at work completing their plans.

The co-operation of the educational authorities has made possible a complete course of instruction for the boys and girls, and this campaign will prove of great benefit to the school children. Much of the information given to them will be carried to the home and exert a helpful influence upon other members of the family.

The arrangements for showing the special dental health film in the theatres are now almost completed and the Province has been well covered. The picture, although short, is very interesting and instructive, and those communities where the dentists have neglected to interest the local theatres in this film will suffer a distinct loss.

Radio messages will be broadcasted from all the Ontario Stations, and the listeners will have a fine opportunity to get reliable information on mouth health.

Attractive posters and stickers for automobiles may be secured by writing to the Director of Dental Services, Spadina House, Toronto.

In a number of places the humorous dental play, "A Bad Baby Molar," will be presented. Copies of the play and the material for the construction of the scenery may be secured without cost.

The Service and Social Welfare Clubs are making valuable contributions by holding meetings and donating prizes for essay competitions on dental health. In this connection we must not forget the Churches. The Secretary for Social Service in connection with the various denominations is asking the clergy to bring the necessity for dental health to the attention of the Church members.

The newspaper and general publicity campaign is all that can be desired. The Insurance Companies are rendering great assistance by preparing a folder on Mouth Health and sending it to each policy holder. The Retail Merchants, and especially the druggists, will provide attractive window displays.

Laymen, teachers, social workers, and nurses, are all doing their best; what about the dentists? We are glad to report that the majority of the members of the Profession are giving the undertaking wholehearted support, and their activities will bring great glory to Dentistry. There are a few who have not yet awakened to the possibility of rendering a great public service at this time. Some people need individual instruction in mouth care; the public lecture and the printed page are not of great help to them. These people will be served by going to the dentist and receiving an examination and advice, including a talk on Oral Hygiene. This service will be given without cost, and every dentist should assist. If you have not already made arrangements to undertake this altruistic work, do so now. Dentistry expects every dentist to do his part, and the dentists of Ontario will not fail their Profession.

[Communications regarding Dental Health Day should be addressed to Dr. Conboy, Director of Dental Services, Department of Health, Spadina House, Toronto.]

Appreciation



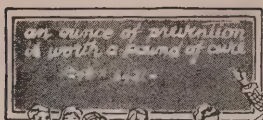
As we go about our own affairs our minds often become dulled to the fact that there is so much good around us in our fellow-men. It takes some event out of the ordinary routine to bring it to our notice.

Owing to eye trouble, I have been compelled to give up the practice of dentistry, and I want to take this opportunity to thank my brother dentists, and also the supply houses I dealt with, for their consideration and assistance in helping me close up my practice.

(Signed) CHAS. G. SCOTT,

20 Charles St. E., Toronto.

[Doctor "Charlie" Scott graduated twenty-five years ago, and has throughout that entire period been engaged in practice in the city of Toronto. He is respected by his patients and honoured and loved by his confreres, and there is sincere and universal regret that Doctor Scott is compelled, because of eye trouble, to discontinue practice. "Charlie" may rest assured that in whatever work he may in the future be engaged he may count upon the wholehearted support of the members of the dental profession.—EDITOR.]



School Dentistry

This Department is Edited by

EDMUND A. GRANT, D.D.S.

*Director of Dental Services—Department
Public Health, City Hall, Toronto.*



We are anxious to receive for publication in this Department reports of work carried on in School Dental Centres anywhere in Canada. Papers on any phase of Pedodontia would also be welcome.—E.A.G.



A Review of Dr. Thomas B. McCrum's Paper—"How to Care for Children's Teeth From Three to Thirteen Years of Age," Presented to the Ontario Dental Association, May, 1926

BY E. A. GRANT, D.D.S.



HAT the importance of children's dentistry is receiving more attention from the profession generally was very convincingly demonstrated at the last convention of the Ontario Dental Association. Dr. Devitt in his presidential address voiced this feeling when he said, "The crying need in dentistry to-day is the care of children's teeth." The programme committee also had this in mind when they selected Dr. Thomas B. McCrum of Kansas City, Mo., to present "How to Care for Children's Teeth from Three to Thirteen Years of Age."

Dr. McCrum is especially well qualified to speak on this subject because he has for some years specialized in Pædodontia. Ten years ago he was Director of Dental Clinics in Kansas Public Schools, and later in private practice devoted entirely to work for children. A few years ago he joined the Deaner Institute, taking charge of the Department of Pædodontia. He is well known, too, as the author of the moving picture film, "Tommy Tucker's Tooth," which has been shown so successfully in many parts of Ontario. He is also an active member and a past president of the Mouth Hygiene Section of the American Dental Association.

Dr. McCrum did not read a paper but gave a talk illustrated with lantern slides which it would be difficult to reproduce for publication. Therefore an attempt will be made to review briefly some of his ideas and methods of procedure. The talk was further elaborated on during a series of clinics to small groups given each morning of the Convention. Dr. McCrum's genial personality and keen desire to give his best services made these clinics a great success. That the different groups were greatly interested was evidenced by their many questions, and the clinic period seemed all too short. Dr. McCrum's good nature was also taken advantage of after hours. On Tuesday afternoon he addressed the children of Rose Avenue School, and on the last day of the meeting spoke at the luncheon of the Toronto West End Kiwanis Club. These were both highly successful meetings.

Dr. McCrum in his talk, said he believed it was incumbent on every dentist to preserve the children's teeth, and if he did not want to work for children he should send them to someone who would. The difficulties of this work must also be thoroughly explained to the parents before starting with each young patient, in order to ensure co-operation. Say to them, "If you want me to, and will give me the co-operation, I can help you to keep these teeth for a number of years longer, but you must bring your child in every three months. That is because fillings cannot be put in as securely in children's teeth as in the second teeth. These fillings may drop out and require frequent replacement, and so we must watch them all the time." By thus explaining to the parents and securing their support you avoid a great deal of trouble and misunderstanding later on. If the parents are unwilling to agree to do their share, it would be better not to undertake the work.

In preparing cavities in deciduous teeth, general rules of cavity formation should be followed as far as possible, except that occlusal steps should be very shallow because the pulp in these teeth is so large and nearer the surface. In cavities where decay had extended deeply, carboleugenol with a little powdered silver nitrate added to it was used to form the step or for capping the pulp when required. The filling materials advocated were copper amalgam, red copper cement, and Ames' Oxyphosphate of copper cement. Proximal fillings in the posterior teeth were made with broad contact points which would not wear down too easily and thus fail to maintain space.

Where there are large shallow cavities and no walls to retain fillings, Dr. McCrum said it was useless to attempt to fill these teeth. His practice was to stain them quite black with silver nitrate by the Howe method. The surface of the dentine would become slick and hard, decay would be arrested, and the tooth could thus be retained for another year or so.

He did not think that the retention of abscessed deciduous teeth in the mouth was justified. These should be immediately removed. Many of these teeth become so virulent as to endanger life, and a child has much less resistance to infection than an adult has. At the Deaner Institute about 100 test cases had been cultured and the serum made would kill a rabbit in eight to ten hours. It used to be thought justifiable to retain these teeth in some cases for the purpose of maintaining space, but this could be quite easily taken care of by a small appliance. Suppose one or even two adjoining deciduous molars have been lost and it is desired to maintain this space for the permanent bicuspid and to prevent the first permanent molar from tipping forward, a band is fitted to the permanent molar and attached to this is a wire loop which extends forward on one side of the ridge to rest against the distal surface of the tooth anterior to the space. If this loop is made just a little wider bucco-lingually than the width of the permanent bicuspid it can be left in position until one or both of these teeth have erupted sufficiently.

Six year molars with defective sulci should of course be filled as soon as possible, but Dr. McCrum also advocated, where these teeth appeared to be quite normal, to cover the sulci with a thin layer of Ames' copper cement as soon as the tooth has erupted, keeping the tooth thus covered up to about 10 years of age. His reason for this procedure was that he believed the tooth at six years of age is not fully calcified and the enamel is less resistant to caries, also the cusps of the tooth are high with correspondingly deep grooves which served to retain food. After drying the tooth, the occlusal surface is covered with a thin mix of Ames' copper cement and a piece of tin foil is placed over it; then, if the tooth is in occlusion, by simply biting on the tin foil the cement is packed down and trimmed.

If the tooth has not yet erupted fully up to occlusion, exert digital pressure on the tin foil or burnish it. This tin foil could be left in position until the next sitting, in order to protect the cement while setting.

Dr. McCrum explained all his methods so clearly and thoroughly and the various steps were so well illustrated by slides, that we feel sure all those who heard him will be doing a great deal more work for children. His visit was also a great stimulus to those engaged in Oral Hygiene work and new ideas were gained along the line of teaching nutrition, such as the food fun game, and some of his newer slides were secured to add to Dr. Conboy's collection for the use of the profession.



Dental Service in the Village of Forest Hill, Ont.

HE Public School Board, on the recommendation of the Medical Officer, has appointed Dr. Arthur Firstbrook as school Dental Officer of the Village of Forest Hill. Dr. Firstbrook will make a dental survey, at the beginning of each school year, of all new pupils. This dental survey will be made free of charge. Where the need for dental treatment in a child is disclosed by the survey, the fact will be reported to the parent and the parent advised to have the child treated by the family dentist.

This written advice to the parent is followed by a home visit by the Public Health Nurse. If the nurse is satisfied that the reason for non-treatment is genuine inability to pay a dentist, she will send a recommendation for treatment to the Health Officer, who, if satisfied, forwards it to the School Dental Officer. The treatment given will be such as should be afforded by a workman for his child. The School Board has appropriated \$200.00 to defray the cost of this dental treatment. Accounts within the appropriation shall be certified by the Medical Officer and paid monthly by the School Board. The dentist will set his charges at one-half the usual fees.

* * * *

Strike While the Iron is Hot

BY AARON NISKER.

One of the teachers in Lansdowne School, Toronto, had been explaining to her class the significance of the old maxim, "Strike while the iron is hot," and then asked the pupils to write an essay illustrating it. The following essay was submitted by one of the pupils:

WAS about eight years old, and it was my second year in school. On the beginning of the third year, September fourth, 1924, I was called to be examined by the dentist, for the first time since I attended school. I was told that I had to get my back tooth fixed. This sounded like a joke to me, so I didn't listen to him.

Later in the season the dentist again called in our room. This time I was expecting worse news than before, and so it turned out, that he told me that about half a dozen of my teeth needed fixing.

After school I spread the news to my parents and they told me to have them fixed immediately, before I had trouble with them.

My teeth did not bother me, so I did not worry, until one day while I was writing my examination at school, my tooth began to ache.

My teacher told me to go home and so I did. The following day at school the teacher read my examination marks as a failure, because I didn't finish, and besides this I missed two more examinations in the afternoon. I asked the principal's permission to have them over, but he refused.

The next day I went to visit the dentist, and after being carefully examined, he told me that I had to get two back teeth and two front teeth filled, and he also asked me whether I had a family dentist or if I wanted to have them fixed at the school. Being too shy to tell the truth that I was poor, I said I had a family dentist.

This very same night I happened to get a toothache, worse than the one before. This time I could not eat or sleep but suffer.

I was forced to drag my father to a dentist, where he was asked thirty dollars for the job. Being very poor, he could not afford it, and again I was left to neglect my teeth for a while.

After suffering a long time I decided to take the shame of my face, by having my teeth fixed by the school's dentist. But by the time I did this another in the side was spoiled and one in the front had to be taken out.

I was left toothless for a year, until another grew, so therefore I give warning to all the boys and girls to strike the iron while it is hot, or you'll suffer for ages like I did.

Complimentary Banquet to Doctor C. Edmund Kells



THE Odontographic Society of Chicago announces a testimonial dinner to be given in honour of C. Edmund Kells, of New Orleans, La. Dr. Kells is one of dentistry's most devoted disciples, and most active, versatile and beloved representatives. He is also the first American dentist to apply the Roentgenogram to the practice of dentistry.

Every ethical dentist throughout the United States and Canada is cordially invited to be present on this occasion. The dinner will be held in the Grand Ball Room, Hotel LaSalle, Chicago, Thursday Evening, October Twenty-first, Nineteen Twenty-six, at Six O'Clock. The banquet will include ladies.

THROUGHOUT CANADA

PROVINCIAL EDITORS CORNER

British Columbia—RAY H. WILSON, D.D.S.
736 Granville Street, Vancouver.

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Quebec—ARCHIE N. JENKS, D.D.S.
Medical Arts Bldg., Montreal
PAUL GEOFFRION, D.D.S.,
308 Sherbrooke St., Montreal.

Provincial Editors will appreciate receiving from all local societies copies of papers, society proceedings or personal notes, for publication.



QUEBEC.

SOCIÉTÉ DENTAIRE DE MONTREAL.

THE last annual meeting of the Societe Dentaire de Montreal was held at the Faculty of Oral Surgery, Universite de Montreal.

Officers elected for the season 1926-27 are: President, Dr. J. P. Lantier; Vice-Pres., Dr. J. A. Pinault; Secretary, Dr. Paul Geoffrion; Asst.-Sec., Dr. P. B. Fleury; Treasurer, Dr. J. A. Thiбаudeau.

The inauguration of a Dental Clinic at the Orphanage of the Sisters of La Charite, and the presentation of a diploma of honour by Dr. Dubeau, Dean of the Faculty of Oral Surgery, University of Montreal, to Reverend Sister St. Alexandre, pioneer of Dental Hygiene, was the occasion of a brilliant ceremony.

The Governor of the Province, all the members of the Societe de Stomatologie of Quebec, Mr. Romeo Langlais, K.C., President of the Rotary Club, which Club gave the Clinic to the Orphanage, were present at the donation.

Speeches were given by the Governor, the President of the Rotary Club; the Honourable Cyrille Delage, Minister of Public Instruction; Dr. E. Dubeau, Dean of the Faculty of Oral Surgery, University of Montreal; Dr. E. Beaulieu and Father Fortier.

PAUL GEOFFRION, Secretary.

THE MOUNT ROYAL DENTAL SOCIETY.

BEFORE taking the summer vacation the Mount Royal Dental Society held a very interesting meeting in the Mount Royal Hotel, Montreal. A symposium was held on the clasp, and a great percentage of the members were present and participated in the discussion.

Introductory remarks	Dr. B. L. Hyams.
Purpose of the clasp	Dr. F. Mendel.
Varieties	Dr. J. W. Singer.
Advantages and disadvantages of the round wire clasp	Dr. L. P. Strean.
Advantages and disadvantages of the flat wire clasp	Dr. N. Lande.
The position of clasp on tooth	Dr. N. Titleman.
Decay of surface of tooth under clasp	Dr. L. J. Rosen.
Loosening of clasped tooth due to improper stresses	Dr. H. H. Lank.
Fracture of clasp at joint, and repair	Dr. Herscovitch.
Resume	Dr. L. Bercovitch.

Early in September the society will resume its work, and an intensive programme has been mapped out for the members.

LYON P. STREAN, D.D.S.,
Secretary.

* * *

ONTARIO

EASTERN ONTARIO DENTAL ASSOCIATION OFFICERS.

THE officers of the Eastern Ontario Dental Association who will have charge of the Golden Jubilee meeting of the Association in Ottawa in 1927 are as follows:

President—Dr. E. H. Wickware, Smith's Falls.

Vice-President—Dr. C. H. Juvet, Ottawa.

Secretary-Treasurer—Dr. S. G. McCaughey, Ottawa.

Programme Committee—Drs. W. C. Macartney, W. B. Beattie, Ottawa; W. H. Woodrow, Brockville; W. B. Cavanagh, Cornwall.

* * *

SASKATCHEWAN.

SASKATOON CONVENTION, 1926.

THE Annual Convention of the Saskatchewan Dental Association was held in Saskatoon on August 2nd, 3rd and 4th. So far as attendance and interest taken in the Clinics and Lectures are concerned, every one reports that there has never been a better convention in the Province.

Drs. P. J. Brekhuis and W. F. Lasby, of University of Minnesota Dental College Staff, were the clinicians, and conducted their work in a manner that only experienced teachers are capable of.

Dr. Brekhuis had for his subject the newest and best methods in

"Bridge Construction"; while Dr. Lasby went fully into "Full Denture Construction," completing a full case in the presence of his class.

On Tuesday, August 4th, the Annual Banquet was held at the King George Hotel, when the usual toasts were given.

The Golf Tournament which was held in connection with the convention meeting was won by Dr. J. G. Countryman, of Saskatoon.

At the Annual Business Meeting, held on Monday evening, a resolution was unanimously passed to the effect that the College of Dental Surgeons collect annually \$10.00 from each member, part of which shall be used to defray the expenses of bringing in outstanding clinicians to conduct group Clinics at various centres throughout the Province. A co-operative scheme will be worked out in conjunction with Alberta and Manitoba in bringing these men to Western Canada.

The following are the officers for next year:

President—Dr. A. J. Brett, Regina.

Vice-President—Dr. S. Moyer, Rosetown.

Secretary-Treasurer—Dr. T. I. Robb, Regina.

Programme and Auditing Committees were also appointed.

—C.W.P.

New Volume Dental Index Bureau



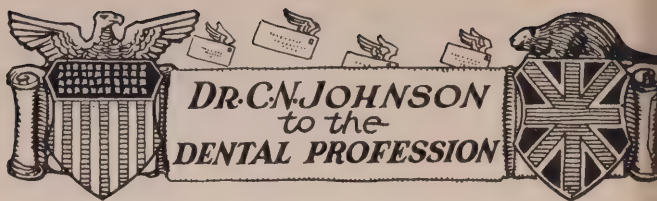
ANOTHER volume of the Dental Index Bureau has been issued covering the five-year period from 1886 to 1890 inclusive. It is expected that another volume covering the period from 1891 to 1895 will be ready for distribution about the first of January next. These books are all uniform in size, binding, and general character, and the price remains the same, namely, \$6.00 per volume, to all points in Canada, post paid. Copies of all volumes issued by the Bureau may be secured through the Secretary, Dr. Abram Hoffman, 381 Linwood Ave., Buffalo, N.Y.

Graduate Dentists Employed by Departments of Health



STATES employing graduate dentists for full time service under the supervision of Departments of Health are the following: Iowa, Illinois, Michigan, South Carolina, North Carolina, Virginia, Pennsylvania, and New York.

In the Dominion of Canada, the Province of Ontario Department of Health has a well organized Dental Service under the direction of Dr. Fred. J. Conboy. The Department is organizing a Province-wide Dental Health Day on Wednesday, the 20th October, 1926.



The Man at the Top

THE Man at the Top is always a mark. Small minds measure him with their narrowness of vision, and shoot at him because he stands out conspicuously. Some one has said, that if you want to escape criticism, be nothing, say nothing, do nothing. I am always sorry for the man at the top—he is the target for every malcontent who is below him. No matter what he does, it could have been done better by some one else, according to the underlings who are pecking at him. If he does a really great thing it is minimized and belittled; if he makes a mistake—ah, that is the time the rabble clamour at his heels!

When he was climbing his way up and struggling against odds every one saw the virtue in him; they said he was brave, resourceful and capable; but the moment he reaches the top they begin to try to drag him down. They find fault with every act, they misconstrue every motive. What before was a laudable ambition now suddenly becomes an unholy usurpation of power and oppression. What before was worthy, now becomes unworthy.

I have often thought that it must be very lonesome for the man at the top. There is so little wholesome helpfulness, and so much obstructive fault-finding—there is so little real companionship. I once saw the fragment of a letter written by a man who had ascended the heights and had been congratulated by one of the few loyal friends who really gloried in his achievements. After thanking his friend he said simply "I find it very chilly up here, but some one must do it." That is the real story with many a man at the top. It is not so much an overweening ambition which has placed him there, but the force of circumstance and the fact that he is fitted for the place. Many of our great magistrates would gladly relinquish their places if they knew some one who would do the work better, or do it even as well. Many a man is devoting a good part of his energy toward so systematizing his work that it can be successfully carried on when he steps down.

The price of high position to-day is very dear—it takes heavy toll

of energy and vital force. A man must be a rare philosopher to remain long at the top; he must learn to ignore petty annoyances. In going bravely on for the ultimate good of the enterprise in which he is engaged he must preserve a clear vision and have the courage of his convictions. He must look to the final goal and brush aside the non-essentials—and it is sometimes so difficult to know what is non-essential. All the time there is the responsibility of making wise decisions—frequently momentous decisions. It is not only his own welfare that is at stake; it is the welfare of every one under him, and this is his chief concern. With every great man who has achieved a high place in the affairs of the world there have grown up many and varied obligations, some of which are likely to lay heavily on him. He is entitled to the help and co-operation of all those coming within the sphere of his actions rather than to be harassed and hampered.

Fortunately the man at the top is usually big enough to look away beyond the small irritations of life and preserve his equanimity. He has a clear vision of what is to be accomplished, and he goes straight to that one achievement. And after all there are compensations for all of his hardships. There is an immense satisfaction in feeling that one is a real asset in the world—that in this great moving hive of activity one is an integral and essential part of it. There is a keen interest in life when one feels the pulse and tempers the acts of one's fellowman. A really great man who is achieving big things can afford to be blamed—even to be blamed without warrant. So long as he has the vision and conviction of his ultimate purpose what matters it that he should be misunderstood? Emerson has said: "Is it so bad then to be misunderstood? Pythagoras was misunderstood, and Socrates, and Luther, and Copernicus, and Galileo, and Newton, and every pure and wise spirit that ever took flesh. To be great is to be misunderstood."

So the man at the top finds himself in good company after all. And then he may know this: when he has stepped down—even when his name is no longer written among the living, every calumny against him is silenced, and nothing but the good he has done will be mentioned. Thus let him persevere; his reward will come—sometime.

C. A. Johnson

There is a better market for smiles than frowns.

DIRECTORY of DENTAL MEETINGS & OFFICIAL ANNOUNCEMENTS

*[Dental Associations are Invited to use this Department Freely for
Announcements of Meetings]*



MONTREAL DENTAL CLUB, FALL CLINIC—November 1, 2, 3, 1926.



Officers of Canadian Dental Organizations

*Oral Health will be Pleased to Receive Additions or Corrections that Directory
of Names May be Kept as Accurate as Possible.*



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CANADIAN DENTAL RESEARCH FOUNDATION

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Vancouver Dental Society

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Calgary Dental Society

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Secretary : Dr. Alex. Gemeroy

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President : Dr. L. T. Allen.
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Saskatchewan Dental Association

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President : Dr. James Plunkett
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Dental Association of Manitoba

President : Dr. J. F. Taylor, Winnipeg, M.
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ONTARIO

Academy of Dentistry, Hamilton

President : Dr. J. E. Johnston
Secretary : Dr. J. D. Brown.

Academy of Dentistry, Toronto

President : Dr. H. G. Robb.
Secretary : Dr. S. Stuart Crouch.

Bay of Quinte Dental Society

President : Dr. F. T. Knight, Picton.
Secretary : Dr. C. E. Wright, Picton.

Brant Dental Society

President : Dr. Angus J. Kennedy, Brantford.
Secretary : Dr. F. J. Wentworth, Brantford.

Cornwall Dental Association

President : Dr. J. V. Lally.
Sec.-Treas. : Dr. H. W. Weagant.

PROVINCIAL AND LOCAL DENTAL ASSOCIATIONS—Continued

Western Ontario Dental Society

President: Dr. E. H. Wickware, Smith's Falls.
Secretary: Dr. S. G. McCaughey, Ottawa.

Windsor Dental Association

President: Dr. Glenn T. Mitton, St. Thomas
Secretary: Dr. C. B. Taylor, St. Thomas.

Windsor County Dental Association

President: Dr. A. Johnston, Windsor.
Secretary: Dr. O. C. Baker, Windsor.

Windsor County Dental Society

President: Dr. C. Marshall, Owen Sound.
Sec.-Treas.: Dr. W. J. Tackaberry,
Owen Sound.

Windsor Dental Association

President: Dr. A. W. Winnett.
Secretary: Dr. T. H. Renton.

Windsor County Dental Society

President: Dr. W. J. Bentley, Sarnia.
Secretary: Dr. W. A. Hartley, Sarnia.

Windsor Dental Society

President: Dr. E. N. Fuller.
Secretary: Dr. S. A. Moore.

Windsor Bay Dental Society

President: Dr. R. L. Dudley.
Sec.-Treas.: Dr. R. A. Torrance.

Windsor Temiskaming Dental Association

President: Dr. G. Mitchell, Timmins.
Secretary: Dr. S. L. Honey, Timmins.

Windsor Dental Association

President: Dr. J. A. Bothwell, Toronto.
Secretary: Dr. F. J. Conboy, Toronto.

Windsor and Durham Dental Society

President: Dr. F. L. Henry, Oshawa.
Secretary: Dr. T. S. Tucker, Oshawa.

Windsor Dental Society

President: Dr. Harry Smith.
Secretary: Dr. L. A. Letellier.

Windsor Dental Society

President: Dr. Harold Long.
Secretary: Dr. M. Crowe.

South Temiskaming Dental Association

President: Dr. W. R. Sommerville, Haileybury
Sec.-Treas.: Dr. W. J. Fuller, New Liskeard

Stratford Dental Society

President: Dr. D. R. Nethercott, Stratford.
Secretary: Dr. J. A. Boyd, Stratford.

Thunder Bay Dental Association

President: Dr. F. A. Blatchford, Ft. William.
Secretary: Dr. H. Quackenbush, Ft. William

Waterloo County Dental Association

President: Dr. W. Burnet, Galt.
Sec.-Treas.: Dr. L. M. Winter, Galt.

QUEBEC

Montreal Dental Club

President: Dr. A. N. Jenks, Montreal.
Secretary: W. C. Bushell.

Mount Royal Dental Society

President: Dr. G. Franklin, Montreal.
Secretary: Dr. I. N. Pesner, Montreal

Quebec Dental Association

President: Dr. E. Charron, Montreal, Que.
Secretary: Dr. Denis Forest, Montreal, Que.

Societe Dentaire de Montreal

President: Dr. Jacques Lantier.
Secretary: Dr. Paul Geoffrion.

NEW BRUNSWICK

New Brunswick Dental Association

President: Dr. G. Leighton, Moncton, N.B.
Secretary: Dr. F. A. Godsoe, St. John, N.B.

St. John Dental Society

President: Dr. J. E. Edgcombe
Secretary: Dr. Frank Boyaner.

NOVA SCOTIA

Dental Association of Nova Scotia

President: Dr. W. C. Oxner, Halifax, N.S.
Secretary: Dr. J. Stanley, Bagnall, Halifax.

PRINCE EDWARD ISLAND

Prince Edward Island Dental Association—

Secretary: Dr. J. S. Bagnall, Charlottetown.

REGISTRARS OF PROVINCIAL DENTAL BOARDS

Prince Edward Island

Dr. J. S. Bagnall, Sec.-Treas., P.E. Island
Dental Association, Charlottetown, P.E.I.

Nova Scotia

Dr. A. W. Faulkner, Registrar, Nova Scotia
Dental Board, 69 Gottingen St., Halifax,
N.S.

New Brunswick

Dr. Frank A. Godsoe, Registrar, Council of
Dental Surgeons, St. John, N.B.

Newfoundland

Dr. W. T. Rea, Sec.-Regis'r, Newfoundland
Dental Board, St. John's, Nfld.

Quebec

Dr. D. Forest, Registrar, Quebec Dental
Board, 187 de la Roche St., Montreal, Que.

Ontario

Dr. W. E. Willmott, Sec.-Treas., Royal
College of Dental Surgeons of Ontario,
211 Huron St., Toronto.

Manitoba

Dr. H. J. Merkeley, Registrar, Manitoba
Dental Association, 706 Somerset Building,
Winnipeg, Man.

Saskatchewan

Dr. L. J. D. Fasken, Registrar, Saskatchewan
College of Dental Surgeons, Regina, Sask.

Alberta

Dr. Leslie McIntyre, Registrar, Alberta
Dental Association, Edmonton, Alta.

British Columbia

Dr. W. J. Lea, Registrar, College of Dental
Surgeons of B.C., Vancouver, B.C.

Obituary

HORACE EUGENE EATON.



EATH claimed an eminent member of the Dental profession of Toronto when Doctor H. E. Eaton died suddenly early upon the morning of Thursday, 22nd of July, 1926.

Dr. Eaton was an honoured member of the profession and had engaged in practice in Toronto for upwards of thirty years, during which time he was associated in various positions of responsibility and leadership with the work of dental associations and particularly those devoted to Oral Hygiene and the education of the people in preventive measures.

He had a great love for the beauties of nature and gave skilful and satisfying expression to this love by painting. Usually on Saturday afternoon when he needed relaxation he would take his easel and paint box and driving out to nearby scenes of beauty he would ply his brush until darkness blurred his canvas. Owen Staples, the well-known Canadian artist, was frequently his companion on these expeditions.

Dr. Eaton was a Nova Scotian and received his dental training at the University of Pennsylvania, practising in his native Province for a short time following his graduation. He was greatly interested in religious work, being actively connected with the activities of the Bloor Street Baptist Church. Dr. Eaton is survived by his widow and one son, to whom the members of the profession extend their deepest sympathy.

* * *

DR. J. W. E. MONFRIES.



AFTER an illness of only two days, shortly after his return from the meeting of the Canadian Dental Association in Halifax, Dr. J. W. E. Monfries, of Australia, passed away at the age of 23 years.

Dr. Monfries was graduated in Dentistry from the University of Adelaide in 1924, obtaining the degree of Bachelor of Dental Science, and after one year's work in the dental services of the Australian Government, came to Toronto to continue dental studies. After completing the final year in the Faculty of Dentistry with high standing, the University of Toronto conferred upon him the degree of Doctor of Dental Surgery in June, 1926.

The Faculty and Dental student body feel a keen sense of regret at his loss, and especially that he was stricken so far from his home and friends in Australia.

Oral Health

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TORONTO, SEPTEMBER, 1926

No. 9

EDITORIAL

Science Knows No Border



THE 1926 meeting of the International Dental Congress in Philadelphia last month was a splendid success, and reflects the greatest credit upon the officers and committees in charge.

This great Congress was an outstanding demonstration of the good-will and sincere friendship that exists among the members of the Dental Profession the world over. Dentists from almost every civilized land gathered and frankly discussed dental problems regardless of the many divergent political and economic issues of their several governments. And how can Dentistry possibly progress as an international force unless the dentists themselves are prepared to forget for a few hours their national differences and sit down together and cordially discuss the many problems facing the whole profession?

This magnificent example of professional good-will among the na-

tions might well be emulated by the provincial units within each country. There certainly are not greater divergences in political, economic, religious or racial viewpoint within any country than exist among the nations represented at Philadelphia. Dentists in every country are obligated to their chosen profession to unite as dental practitioners having an important health mission to the people, and work whole-heartedly in the solution of the problems of Dentistry as they may apply to the national services of their country.

Provinces may be quite distant from one another, have many local problems peculiar to themselves, and be quite different in language or religion, but notwithstanding all, feel such a responsibility to their Profession, determine to work together that Dentistry may occupy its destined place in the Federal and National health activities of their country.

In Canada, the proposed organization of the Canadian Dental Association along similar lines to that of the American Dental Association will doubtless result in all the provinces appointing representatives to a Board of Delegates, thus making the C.D.A. equally representative of every province in the Dominion, and establishing a more practicable and stable organization. The Canadian Dental Association, being a purely voluntary body, without control over dental licensure or exercising mandatory power in any way, affords an ideal opportunity for delegates from the several provinces to meet regularly for discussion and action upon all matters affecting the interests of dental health.

* * *

Canadian National Dental Organization

 HE progress of the Dental Profession in Canada demands a more active and better organized National Association, generously supported by the Provinces of the Dominion. The work to be accomplished by the Canadian Dental Association is of vital concern to the people of Canada, as well as to the Dental Profession itself.

A strong organization, representative of every part of Canada, enables the Profession to speak with its full weight and authority in everything affecting the best interests and welfare of Dentistry throughout the Dominion, and ensures the maintenance of cordial international dental relations. Through such an organization it should be possible to bring about more effective and closer co-operation among the Provincial and Federal dental bodies of Canada, and make financial or other assistance available to any Province in case of serious difficulty or need.

There are many problems of a purely Federal nature that require attention, among them being the appointment of a Director of Dental

Services in the Department of Health, Ottawa; the status of Dentistry in the Department of Soldiers' Civil Re-establishment and the Militia of Canada, and dental service for immigrants and for inmates of Federal Institutions. Other problems of a provincial character are also of vital concern to the whole Profession. The study of the dental laws of the several Provinces, with a view to attaining their greater uniformity, and the question of provincial co-operation in the establishment of disciplinary power and the maintenance of ethical standards of practice are vitally important. Adverse conditions of practice, or legal decisions affecting the rights of dental practitioners in any one Province, seriously affect those of other Provinces. There is need for the closest possible co-operation, and the granting of assistance when a burden falls upon the Profession of any Province greater than it is able to bear.

To better accomplish these and similar objects, the Canadian Dental Association is endeavouring to organize itself as a Board of Delegates, and will ask each Province to appoint two official delegates, thus making a Canadian Board of eighteen, which it is proposed will meet annually, administer the affairs of the Association, and officially report back to the Provinces on the work of the Association. Decisions as to when and where Canadian Dental Conventions will be held, and all other business of the Association, will rest with the Board of Delegates. It is proposed that the year a general Convention is held the Board of Delegates meet previous to the Convention and report its actions to the Convention for the general information of the members.

The more frequent meetings of a smaller and more representative group of officially appointed delegates will enable the Canadian Dental Association to go forward and meet the present and future problems of Canadian Dentistry with great assurance of success.

* * *

Canada and the Canadians



THE automobile has proven a great stimulus to travel, and during the past summer the C.D.A. meeting at Halifax and other objectives have resulted in hundreds of Canadian citizens journeying beyond the borders of their own Province and learning something of the beauties of the scenery and of the character and hospitality of the people of other parts of the Dominion.

The onus rests upon all citizens and particularly upon the members of the learned professions to welcome every opportunity of broadening their interests and sympathies by travelling beyond their own Province. The automobile makes many such opportunities possible.

It is an excellent thing for the East to travel West, to get something

of the inspiration of the prairies, the grandeur of the Rockies and the wonders of the Pacific slope. And it is a good thing for the West to travel East, to learn more of the beginning of things Canadian, to study the developments of the Province of the Great Lakes, to follow down the course of the mighty St. Lawrence and learn more of the life and habits and accomplishments of the people of Quebec. Every Canadian should study the many points of historical value, not only in Quebec, but throughout the Maritimes. Too few Canadians have knowledge of, and therefore do not fully appreciate, early Canadian history and the many points of historical value which are to be found in the older sections of the country.

More friendly intercourse will make us better Canadians, with greater sympathy toward the problems peculiar to every Province of the Dominion, and having an interest intelligently based upon personal knowledge and experience. Members of the Dental Profession will surely play their part and unite in the organization of Canadian Dentistry in the development of Canadian resources and in the building up of a great Nation of united, contented people,—healthy, prosperous and happy.

The Ontario Dental Health Day



ATTENTION is drawn to the announcement appearing in the Department of "Public Health Service" in this issue. Doctor Conboy has outlined the programme for the 20th of October, and appeals for the wholehearted support of every member of the profession in the Province of Ontario, in making the Provincial Dental Health Day a great success.

Doctor Conboy, as Director of Dental Service, is receiving most cordial and active support within the Department of Health and is rendering a great public service to the people of the Province.

Canadian Dental Convention



IN a subsequent issue will be published the complete proceedings of the Canadian Dental Association Meeting held in Halifax in August. The proceedings will be released for publication to the profession as soon as they are prepared by the committee.

True Fraternity

By VICTOR HUGO

SHARE your bread with little children,
see that no one goes about you with
naked feet, walk through the world
without malevolence, do not knowingly
crush the humblest flower, respect the nests
of birds, bow to the purple from afar and
to the poor at close range.

Rise to labour, go to rest with prayer, go
to sleep in the unknown having for your
pillow the infinite; love, believe, hope, live;
be like him who has a watering pot in his
hand, only let your watering pot be filled
with good deeds and good words.



DOCTOR O. SPENCE CLAPPISON

THE members of the Hamilton Academy of Dentistry recently honoured Spence Clappison at a Dinner and Presentation when good wishes were extended upon his removal to Toronto to become associated in practice with Dr. Capon.

Doctor Clappison throughout his years of practice in the city of Hamilton has consistently given a measure of his time to experimentation in the problems of practice and in presenting the results of his work to his confreres in Hamilton and elsewhere.

ORAL HEALTH

*A JOURNAL THAT STANDS FOR THE OUNCE OF
PREVENTION AS WELL AS THE POUND OF CURE*



Vol. 16

TORONTO, OCTOBER, 1926

No. 10

President's Address, Canadian Dental Association, Halifax, August 16th to 19th, 1926

GEORGE KERR THOMSON, D.D.S., F.A.C.D.



R. VICE-PRESIDENT and members of the Canadian Dental Association: In accordance with a time-honoured custom, I am expected to deliver an address on this occasion, and I assure you have pleasure in doing so, but it will necessarily be as brief as possible, for the reason that we have not much time at our disposal for general meetings, and there are so many matters of importance to us as a national body that require careful consideration and discussion that it is necessary to devote as much time as possible to them. You will, therefore, pardon me if I dispense with the usual platitudes. However, I wish to thank you sincerely for the honour you have done me in electing me President of this organization. I certainly appreciate it, but I also appreciate the responsibility which goes with it, and with that in mind during the last two years I have endeavoured to encourage co-operation among the profession, not only nationally, but internationally. I have had considerable correspondence with members of the profession throughout Canada and in other countries, particularly with regard to uniformity of Legislation and Education, and it all indicates a desire to co-operate in reaching the ideal, not only in these phases of our work, but also in Preventive and Public Health Dentistry.

Reports of our Dominion Dental Council and the various committees of the Canadian Dental Association will show that much has been accomplished during the past two years, and there is a desire on the part of the profession to make even more progress in the future. In fact, members of our profession, chiefly through the publicity given this

matter in our dental journals, have plainly intimated that some changes are necessary in the Constitution of the Canadian Dental Association and Dominion Dental Council, and some definite action with regard to these matters at this meeting is very desirable.

Since our last meeting a number of our prominent members have passed on, and reference is made to them by Dr. Wilmott in the Necrology Report.

I am sure we all regret the serious illness of our Honorary President, Dr. S. W. Bradley, but it is gratifying to learn that his recovery is assured.

CANADIAN DENTAL ASSOCIATION.

At the last meeting, our Honorary President, Dr. Sydney Bradley, in his presidential address made excellent suggestions, which resulted in the adoption of a resolution that the Executive Committee appoint a committee to consider them and report at this meeting. This report we hope to receive. I refer to them now to urge the organization of an association on the same basis as that of the A.D.A.—an association supported by a *per capita* contribution from district or provincial societies, which will meet annually and jointly with various district and provincial societies.

At the present time there is a tendency towards affiliation with dental societies of the United States, particularly on the Pacific Coast, and while this is very desirable from several standpoints and may grow on the Atlantic Coast, it will probably affect the unity and co-operation which should exist in our own national organization, and even result in its disintegration. This is a phase in the revision of our Constitution which should receive some attention.

Dr. Bradley also suggested that an official magazine be published by the Association, and that a Dominion Dental Protective Association be organized; at the same meeting it was resolved that the incoming Executive appoint a Committee on Revision of the Constitution and By-Laws to report at this meeting. Doubtless the report of this committee will recommend provision for official delegates to international as well as national meetings.

DOMINION DENTAL COUNCIL.

At this meeting I will not refer to the Dominion Dental Council—the report of which will be considered this afternoon—except to remind you that it has been a very successful organization and has placed Canada far in advance of other countries so far as Reciprocity of License is concerned, and has had great influence on the educational requirements of our dental schools and the legislative requirements of the majority of our provinces.

DENTAL EDUCATION AND LEGISLATION.

These two subjects are so closely related that it is impossible to discuss one without referring to the other.

During 1925, with a view to obtaining information for a report on Dental Education to be presented at the Conference of Canadian Universities, which was held in June of that year in Halifax, I wrote representatives of Provincial Boards, Dental Schools and the Dominion Dental Council as follows:

DENTAL BOARDS.

"At the conference of Canadian Universities, to be held in Halifax June 2nd to 4th, 'Uniformity of Dental Education and Legislation' will be thoroughly discussed. The idea suggested at the Vancouver C.D.A. meeting, of co-operation among representatives of the D.D.C., Provincial Dental Boards and Dental Schools in arranging a standard of education which may reasonably be endorsed by legislation of the various Provincial Governments, and which would eventually lead to universal reciprocity in license to practise, will doubtless be considered. It would, therefore, be of great interest to the conference to have the opinions of the various boards as to the desirability and feasibility of obtaining such legislation in the various provinces. Will you kindly inform me if your Board will consider applying for legislation requiring applicants for professional examinations for license to practise to present a diploma from a college requiring, at least, one Pre-Dental year in an academic college and four years' professional study, and, if so, is it probable the Government will enact it?"

"In Nova Scotia, the Board is asking for power, with the approval of the Association and Governor-in-Council, to make the necessary regulations so that changes may be made at any time without applying to the Legislature. If your Board has not already this power, do you think it desirable, and could it be obtained at an early date? Now that so many of the schools are adopting the curriculum of the one Pre-Dental and four professional years, it would seem an opportune time for us to secure higher legislative standards throughout Canada. I will appreciate it very much if you will send me information and advice at an early date.

"With kind regards, sincerely,

(Signed) "GEORGE KERR THOMSON."

DENTAL SCHOOLS.

"You are doubtless aware that the date for the conference of Canadian Universities has been changed to June 2nd to 4th, and it will be held in Halifax. Dean Ling, the secretary of the conference, has requested that I act as chairman of the Dental Committee, and I have consented to do so. I understand my duty will be to arrange for the presentation of a report on Dental Education and matters pertaining thereto which may be properly discussed at the conference.

"It occurs to me that this will be a most opportune time for the representatives of our Dental Schools to discuss the idea suggested at the Vancouver C.D.A. meeting, viz., that of co-operation with representatives of the D.D.C., the Dental Faculties, and the several Provincial Dental Boards, in arranging a standard of education which would reasonably be endorsed by legislation of the various Provincial Governments, and which would eventually lead to universal reciprocity of license to practise.

"There is also the matter of standardizing, as nearly as possible, our curriculum, and whether or not our course shall be designated a five-year course or a four-year course with a pre-professional year in an academic college. If you will kindly inform me at the earliest possible moment of the opinion of your Faculty with regard to these matters, and also send me suggestions with regard to other matters you think should be discussed at this conference, I will appreciate it. If time permits hearing from representatives of the schools to whom I have sent this letter, I will submit proof of the report for your consideration and comments. With kind regards and hoping to see you at the conference in June.

"Sincerely,

(Signed) "GEORGE KERR THOMSON, Dean."

"Dr. Eudore Dubeau,
"308 Sherbrooke Street,
"Montreal, P.Q.

May 4, 1926.

"My dear Dr. Dubeau,—Enclosed herewith are two self-explanatory letters which have been sent to Registrars of Provincial Dental Boards, representatives of the D.D.C., and Deans of Canadian Dental Schools.

"I am informed that McGill has decided to require matriculation in Arts as an entrance qualification for students who do not wish to practise in Quebec, and that in 1926 and 1927 all students will have to possess two years in Arts.

"As you are aware, I am much interested in national standardization of legislation, and would like to see reciprocity of license to practise universal, at least within the British Empire. Surely a man who has proved he is qualified to practise in one province of the country should be recognized by other provinces and countries, without further examination. In Canada, the Medical profession seem to have solved the problem, and I believe they have a practical organization to which license to practise anywhere in Canada can be obtained. If they could arrange matters so that Quebec became part of the organization, why cannot we, in the Dental profession, do so? Now that most of the Schools are requiring five and six-year courses, it would seem an opportune time for us to co-operate in arranging a national standard which would be agreeable to all the provinces. May I hope to hear from you at an early date with regard to the matter?

"I hope to meet you in Halifax at the conference of Canadian Universities in June. If impossible for you to come, who will represent your school? With kindest regards to you and Dr. Nolan.

"Yours sincerely,

(Signed) "GEORGE KERR THOMSON, Dean."

Replies from some of the Western Provinces indicated that the Legislatures were not likely to favour dental legislation, but that at a later date some effort would be made to obtain the desirable amendments suggested.

At present the Dental Schools in Canada have practically the same requirements, and, with the exception of Quebec, British Columbia, Saskatchewan, New Brunswick and Prince Edward Island, the requirements for license to practise are also equivalent.

With the adoption of a five-year course by nearly all the United States Schools, the principal obstacle to enactment of legislation requiring that candidates for examination and registration must be graduates of schools requiring a course of five years, has disappeared, and it is expected that all provinces below that standard will be able to enact legislation uniform with those requiring five years' studentship; a resolution with reference to this matter would seem to be in order, and, if possible, during this convention a conference of representatives of the D.D.C., the Schools and various provincial dental examining bodies should be held.

As a result of this report to the Conference, a resolution was adopted providing for the representation of Dental Faculties and Colleges in the conference—this provision having been previously omitted.

The Provincial Dental Board of Nova Scotia, instead of conducting its own professional examinations as heretofore, has completed arrangements with the examiners of the Dominion Dental Council to conduct

examinations of candidates for registration in Nova Scotia. Why should not all our Provincial Boards employ a central examining body such as the D.D.C. to do likewise? The Nova Scotia Dental Board believes that this plan to a great extent prevents the legislators implying that there is any partiality in the present system. It would certainly be a step toward the interchange of licenses to practise which we all consider desirable, and, if adopted by other countries, would eventually result in International Reciprocity.

INTERNATIONAL DENTAL CONGRESS AND FEDERATION DENTAIRE INTERNATIONALE.

During the last twenty-five years this Canada of ours has been increasing, not only in population, but in importance as a nation—so much so that during and since the great war she has been recognized as a nation within the British Empire. However, from the standpoint of the profession of Dentistry this has not been the case, and with the object of obtaining this recognition I have had considerable correspondence with our Government and the officials of the I.D.C. and F.D.I.

The I.D.C. has been recognized by the American Government to the extent that recently a law was passed authorizing the President of the United States to invite Governments of other nations to appoint at least three official delegates to the Congress. Canada was included as one of the nations, and I am glad to inform you that our Government has appointed official delegates to the Congress which meets in Philadelphia next week.

I wish here to express appreciation of the action of our Federal Government in responding to this invitation from the Government of the United States. The following appointments have been made: Drs. Wallace Seccombe, Arthur Beauchamp and George Kerr Thomson. Although it was necessary to direct the attention of our Government to the international importance of accepting the invitation, yet when it was explained and understood there was no hesitancy in its action, which, I am sure, will receive your approval.

Our national Association has also been recognized to the extent that we have been invited by the International Dental Congress to send five delegates to represent our Canadian Dental Association.

As time did not permit the Executive Council to meet and select these official delegates, it will be your duty to do this at this meeting. Letters of appreciation of our interest in the Congress have been received from President Logan and Secretary-General King, and it is desirable that as many of us as possible should attend the Congress. It will go far towards cementing the friendly relations already existing between our two countries, etc. The requirement of the I.D.C. with

regard to membership of national societies is payment of a fee of \$1.00 *per capita*. I recommend this Association become a member, and that immediate action towards that object be authorized at this meeting.

Up to the present time Canada has not been officially represented on the F.D.I., an organization which is elected at the close of the Congress for the purpose of acting during the interim of meetings of the Congress. A resolution with regard to these matters should be adopted at this meeting. In this connection, provision should be made in our Constitution and By-Laws for the appointment or election of representatives to international meetings, as well as other national meetings.

PREVENTIVE AND PUBLIC HEALTH DENTISTRY.

Of all branches of our profession these probably are the most important, but until recent years have received the least consideration. In the Faculty of Dentistry of Dalhousie University they are very intimately associated in the School and Health Centre, and the Dental Faculties of both Dalhousie and Toronto Universities have for some years been teaching Preventive Dentistry as a separate subject. In 1918 there was established here a Pre-school Age Dental Clinic, the records of which prove conclusively that instead of children entering school 90% imperfect from a dental standpoint, it is possible by pre-natal instruction to the parents and prophylactic treatment for the children to have them enter school almost 100% perfect, not only from a dental standpoint, but from that of general health. This clinic is now conducted in our University Health Centre, and is also used for teaching purposes.

It is my belief, and I have advocated it for several years before this Association and elsewhere, that clinics of this kind should be established wherever possible throughout Canada—in fact, throughout the world, and that an international propaganda should be immediately instituted. This might well be made one of the important objectives of our Association.

In this connection we are pleased to note a considerable degree of co-operation on the part of our Federal and Provincial Departments of Health, Red Cross, Massachusetts-Halifax Health Commission, and the C.O.P.A. and C.D.H.C.

Addresses and reports of representatives of the two latter organizations will be presented officially, and at publication should be of much interest to us, as well as to the public. It is believed that with further co-operation of the Governments and Red Cross Societies our C.D.H.C. will prove a most valuable factor in solving the public health problem.

WOMEN IN DENTISTRY.

In all our Dental Schools women are accepted as students on the same terms as men, and it is suggested that the field of Preventive and Public Health Dentistry is peculiarly theirs, and members of our Association should encourage them to study Dentistry with the object of providing services in this connection. There is also a great field for Preventive services by the Dental Hygienist, and it is very much desired that less discussion and more co-operation and action in providing both women dentists and hygienists for public health services be encouraged. As the Office Secretary and Dental Nurse have their sphere of usefulness, so have the women Dentists and the Dental Hygienists, but that of the latter two is of much greater importance.

I sincerely thank the officers and various committees for their unselfish co-operation in arranging our programme, and all those who are contributing to it in any way. The dental journals in Great Britain, United States and Canada, as well as the newspapers, have been exceptionally generous in the space devoted to our interests, and should be officially informed of our appreciation.

Delegates to the International Dental Congress



THE following delegates to the International Dental Congress visited Toronto recently on their way home, and spent a few hours at the Faculty of Dentistry of the University of Toronto.

FRENCH DELEGATES.

Mr. and Mrs. Willan, Dr. A. Blatter, Dr. M. Roy, Dr. Frison, Mrs. Frison, Dr. Huit, Miss Huit, Dr. F. Bellacq, Dr. and Mrs. A. Yoachim, Dr. E. Fourquet, Dr. A. Nazaretto, Dr. Chas. Hill, Dr. Macary, Dr. and Mrs. Piquet.

GERMAN DELEGATES.

Dr. Bejach, Dr. Bichlmayr, Dr. Cohn, Mrs. Cohn, Prof. Dieck, Dr. Ganz, Dr. Gutowski, Dr. Hauptmayr, Dr. Joergens, Dr. Kling, Dr. Lehmann, Dr. Lewerenz, Mrs. Lewerenz, Dr. Loos, Dr. Muller, Dr. Schmidt, Dr. Schwarz, Dr. Wehlau, Dr. Weise, Dr. Wittkowski, Dr. Belinoff, Dr. Schindler, Dr. Knocke, Dr. Schroeder, Dr. Prosskauer, Dr. Adrion.

President's Address, Nova Scotia Dental Association*

W. C. OXNER, D.D.S.

President, Nova Scotia Dental Association.



O the many gracious and sincere words of welcome to which you have listened, representative of Church, State, Province, City and University, I, on behalf of your fellow workers of the dental profession of the Maritime Provinces, desire to add a most cordial welcome and greeting, carrying with it the hope that, coming from this source, it may touch a specially responsive chord in your heart and find an echo in mutual good fellowship. Many of you have travelled long distances to get here. Let me assure you we are mindful and appreciative of this fact and also of your generous contributions toward the programme.

When our invitation to hold this Convention in Halifax was accepted, I will not deny the fact that some of us, for just a moment, had cold chills. Can we in this end of the Dominion, such a comparatively small number of us, put this Convention over? Yes. Knowing the generous nature of the profession as a whole and realizing also that we would have the hearty sympathy and co-operation, not only of our own Canadians, but also of our very good friends from the United States, we were glad to undertake the organization of this meeting, and now a glance at the programme containing names, many of them of international reputation, proves conclusively how more than justified our faith in you has been.

A number of us in this audience hope shortly to attend the Seventh International Dental Congress. In comparing this meeting with over three hundred other conventions to be held in Philadelphia this year, many of which will be of international scope, some one has used these words: "The Seventh International Dental Congress is in the front rank of importance among these assemblages. Not only in the size of its attendance is it so, but in scientific significance and influence on human welfare the Dental Congress is among the most notable gatherings of 1926." There is a trite old saying, "comparisons are odious," but may one not venture to hope that from the Canadian meeting, though so much smaller in numbers, there may emanate some grains of truth and knowledge which may result in a benefit to humanity and be worthy of recording for future use.

Apropos of this thought, I wish to leave in your minds a quotation

* Read before the Canadian Dental Association, Halifax, August, 1926.

by one of the most picturesque and outstanding figures this Province has ever known, the late Joseph Howe, who, at a family re-union held in Framingham, Mass., used these words, "A wise nation preserves its records, gathers up its monuments, decorates the tombs of its illustrious dead, repairs its great public structures and fosters national pride and love of country by perpetual reference to the sacrifices and glories of the past."

Ladies and gentlemen, I trust you may carry back to your homes helpful and happy memories of your short stay in Halifax.

Operative Dentistry

THOMAS P. HINMAN, D.D.S., ATLANTA, GA.

*"A little learning is a dangerous thing;
Drink deep, or taste not the Pierian spring.
There, shallow draughts intoxicate the brain
And drinking largely sobers us again."*

IN this day of wild dissension and rather acrid discussion of oral foci, we are sharply reminded of Alexander Poe's epigrammatic way of saying that people are too often prone to accept half truths for the whole thing, and it seems to me that the crying need of our profession to-day is to take "larger draughts" in order that we may soberly look at the work in its entirety and not drift away from the old standards which make dentistry pre-eminent in the healing art. Sometimes one feels as if he would like to grasp the whole scheme of things in our professional world and re-mould it more in accord with these standards. For, undoubtedly, amid the wild statements and opinions and discussions with which we find the pages of our dental publications filled upon the advisability of retaining a pulpless tooth, or extracting a pulpless tooth; or, whether oral foci produced disease, or did not produce disease,—I say amid all this discussion, our minds have been so drawn aside from our real, true work that the subject of operative dentistry lies in the background, and a paper discussing this subject is a rarity.

However, that eminent practitioner, Dr. C. N. Johnson of Chicago, has recently written a paper which covers many salient points in practice and draws our attention to some of the older things so fundamental to the successful carrying on of our professional work. The article, which is published in the May issue of *The Journal*, created a mild sensation

in dental circles; at least it did so in our country. I cannot too strongly urge upon the members of our profession to read Dr. Johnson's article carefully and heed the excellent advice of a man so distinguished in the professional world.

It seems to me that amid these varying opinions, both pro and con, the younger mind, that is, the man who has been practising only a few years, must find the profession in such a chaotic condition that it is difficult for him to carry on without many misgivings and I believe his position is a particularly unenviable one. In my opinion, however, the day of the alarmist is fast fading; the cry of "wolf" has been recognized as a false alarm and the great bugaboo-bear that was going to devour everybody has turned into a Frankenstein which is destroying its creator. So, to the young practitioner, I give this word of advice which I think he may heed with profit. Thousands of people have lived to a pretty good old age who had infected teeth and numbers of these had neither neuritis nor rheumatism, nor any other apparently secondary constitutional disturbance. Let this be remembered and heeded in daily practice.

Dr. Percy Howe, in the June number of *Dental Items of Interest*, says:

"When we turn from theoretical to practical considerations, we would do well to ask ourselves a few pertinent questions before exposing our minds to those seductive influences which the relating of remarkable cures inevitably carries in its wake, whether the story comes from some mystic shrine, from a Christian Science reading, from a Coue clinic, or the office of a one hundred per cent. extraction enthusiast. Common sense and intuition should not be outcasts here, or anywhere."

It may be interpreted from the foregoing that I am not a believer in oral foci as a producer of constitutional disease. On the contrary, there are some few instances in which this has been demonstrated, but the thing has been terribly overdone. In the June, 1926, issue of the *Dental Cosmos* we have a splendid paper by H. J. Coffey in which he has worked out a very satisfactory re-action test which indicates whether or not the individual is susceptible to infection located in the mouth, or whether he is immune. It is well to note that eighty per cent. of all those tested showed immunity. This man has had opportunity of seeing a tremendous number of cases and his findings are most interesting.

I fear I have used my preamble on a subject I wished rather to avoid. However, it is significant to note that the tidal wave of extraction which has swept the country has about subsided, but it has left unmistakable evidences of destruction in its wake.

For the purpose of covering the subject of operative dentistry in as succinct a manner as possible, I am dividing my discourse into two sec-

tions: first, Diagnosis; second, Operative Procedure and Indications for Filling Materials.

DIAGNOSIS.

It is interesting to compare the methods of diagnosis used by the internist with those used by the dentist. The internist fully realizes that the diagnosis is the sum of our knowledge of the disease, whereas the dentist, on examining the mouth, endeavours to find what teeth need fillings, crowns or bridges. He frequently fails to consider the whole mouth as an entity, but simply selects the teeth that apparently need physical repair. This is clearly not as it should be. On the other hand, when the patient presents for examination, careful note should be made of the condition of the tongue, salivary glands and mucous membrane of the whole mouth. Particular attention should be paid to the conditions of the gingival tissues, for here we invariably find evidence of sub-gingival disturbances which may simply be a parula, or a slight muco-purulent exudate, or a slight bleeding of these tissues; all evidences of a disturbance that is sure to prove serious.

It is wise when external evidence is present that there are any pulpless teeth, or that the sub-gingival tissues have been invaded deeply, that a complete x-ray review be made of the mouth,—always keeping in mind that the x-ray picture is only one of the factors in diagnosis and should not be used alone as evidence. Those who pin their faith to the x-ray picture as practically the sole means of mouth diagnosis will most certainly be led astray. Not every darkened area beyond the apex of the tooth is indication of infection. Malocclusion frequently produces this area around the apices of single-rooted teeth,—sometimes around multi-rooted teeth also. No x-ray picture in the world has ever shown infection but it does show evidence of bone destruction which may, or may not be infected.

And so I say emphatically there must be other evidence than the x-ray picture to determine the vitality of teeth which are apparently pulpless. And in this connection, let me say this: if we would use our God-given senses, that is, touch, sight and subjective symptoms, we would err less frequently in our diagnosis. It is absurd to begin the construction of crown, inlay or bridge work without first determining if the underlying structures are sufficient to support the restoration, yet daily we see evidence of such errors which result not only in the loss of the patient's money but frequently the loss of the teeth themselves. If more time and attention were given to the proper diagnosis and the application of the right principles in the filling and the correct form of bridging teeth, our work would be of a more permanent character and our patients find greater comfort as a result of our efforts.

OPERATIVE PROCEDURE AND INDICATIONS FOR FILLING MATERIALS.

In the selection of filling materials, the keenest judgment on the part of the operator is required. So frequently this part of our work does not receive as careful attention as it deserves. In the first place, no attempt should be made to make a restoration of any type in the mouth until the oral tissues are put in as healthy condition as possible. The most important thing is the training of the patient in the proper cleansing of the teeth after the dentist has brought them into as nearly normal condition as possible. All deposits should be removed and evidences of gingival disturbance corrected before any attempt is made to restore any of the lost parts.

There can be no fixed set of rules governing the choice of materials to be used in the restoration of the tooth structure. However, there are certain fundamentals which, in my judgment, seem to be paramount.

First, in the anterior portion of the mouth, where the filling might be visible, material should be used that appears least conspicuous. It is sometimes permissible to place in these teeth even a filling that,—due to the type of material,—might not be as permanent as another, yet the cosmetic appearance of the teeth, particularly in the mouths of ladies, should receive our utmost consideration. There can be no question but what properly constructed porcelain inlays placed in cavities correctly prepared for their reception have been and are a pre-eminent choice for these teeth. It is quite true that the substitutes for porcelain,—that is silicate cements,—have their place in our choice of filling materials. However, the permanency of this material compared with porcelain is still in a state of extreme uncertainty. It has the serious defect of absorbing the fluids of the mouth and becoming stained by certain foods during the process of mastication. This, however, seems to occur only in some mouths,—which are impossible of pre-determination. When this material has been selected for the filling of any specific cavity, great care should be used in the mouths of young people to prevent its coming into close proximity with the pulp. It is often wise to line these cavities with a thin layer of cement before the introduction of this material.

This material also lacks permanency in large restorations. This is particularly true where incisal or occlusal surfaces are involved. It is not nearly so compatible with the gingival tissues as is porcelain, and cavities that pass beyond the gum margin filled with this material nearly always show a slight irritation followed by recession, whereas, when properly adapted porcelain inlays are used, the liability of irritation and recession is practically nil. At least, this has been my experience.

In the hands of the inexperienced operator, the ability to match correctly the shade of the tooth to be filled is more easily accomplished with the silicate cements than with the porcelain. However, with a little experience, if due care is exercised, porcelain may be adapted and the colour matched with facility. It may be noted that cavities on the proximal surfaces of the incisors should be filled with a material which matches the incisal third of the tooth, whereas, in cavities on the labial and buccal side the filling material should match the gingival third. In fact, in this last locality, the filling material should be slightly darker than the tooth structure. Nothing can be more conspicuous than a labial or buccal cavity filled with a material too light in colour; it immediately becomes noticeable. All pioneer porcelain workers were aware of this when following the line indicated above in matching inlays to the teeth. It may also be noted that as age increases, the teeth progressively become darker.

My observation has been that the apparent ease of manipulation of the silicate cements has caused many operators to become careless and often silicate fillings are so poorly matched that the results are anything but artistic. I cannot too strongly urge the younger operators to use more care and skill in the selection of their colours. In this respect, I have found that women have a much better eye for colour than men, and the assistance of the dental nurse in matching shades has been invaluable.

If silicate cement is handled with proper care, it undoubtedly has a permanent place in our work. I believe it is essential to have the slab and spatula for this mixture of even temperature. Some operators have a habit of chilling the slab and not chilling the spatula. This is sure to bring an uneven mixture of the material.

AMALGAM.

In my judgment, amalgam has a very limited use in the mouth. Its proper manipulation is the most difficult of all filling material, and its stability, even under the most favourable conditions, is extremely uncertain. Proximal cavities, where contact is to be maintained, should rarely ever be filled with this material. It is indicated on the buccal and occlusal surfaces of molars. After a most careful and thorough series of experiments and observations, extending over a period of thirty-six years, my opinion is that amalgam cannot be relied upon, either to maintain approximal contact or occlusal carving. It also has a great tendency to protrude at the gingivo-proximal margins, thus producing a chronic irritation which is followed by suppuration and destruction of the supporting structures. If conditions make the use of

this material imperative, then I believe the fillings should be frequently inspected, smoothed and repaired.

Amalgam has been found valuable for the filling of small cavities in the mouths of patients beyond forty years of age, where the recession of the soft tissues, due to suppurative destruction, has caused these cavities to be formed on the proximal surfaces at the cemento-enamel junction. Where these cavities are not extensive, not having penetrated to the occlusal surface, small fillings inserted and polished have proved both satisfactory and permanent. It is wise to wipe out the cavity with nitrate of silver solution before the insertion of the amalgam.

I believe it is a much more difficult operation, and requires more time to fill properly two proximal cavities between molars with amalgam, carve, polish and finish them,—than it would be to insert gold inlays, and, after the work is accomplished, the filling is so far inferior to the properly adjusted gold inlay that amalgam, as a filling material in this locality, is, in my judgment, a mistake. Personally, I have made no use of this type of amalgam for many years.

GOLD INLAYS.

The introduction of the cast gold inlay has been one of the most marvellous advances in operative dentistry of all time, and we should not be stinted in our praise of Dr. William Taggart, of Chicago, who first introduced us to this splendid method of filling teeth. It both conserves the energy of the operator and reduces the discomfort of the dental operations to the patient. It is possible, with this method, more nearly to restore the lost parts anatomically than with any method of which I have knowledge.

And yet, on the other hand, we see gross abuses of the inlay. In the hands of the careless operator, it seems to be doing more damage than good, very little attempt being made to carve occlusal surfaces properly, or reproduce the lost structure. It has been my misfortune to see mouths in which the whole occlusion was disarranged due to several teeth being incorrectly inlayed. If occlusal surfaces are left too high, as is frequently seen, traumatic injury is sure to result, and in extreme cases will eventually cause the loss of the tooth.

Some operators have apparently taken this as a rapid method of putting gold in teeth and have lost sight entirely of the fact that correct anatomical restoration is far more important than an absolutely perfect margin. The cement, in the event of an imperfect margin, fills the crevice sufficiently to prevent, for a considerable length of time, re-decay, but unanatomical form is a serious menace to the permanent health of the tooth. In this respect it is frequently noted that the point

of proximal contact between molars is, in many instances, located centrally, whereas it should always be located on the buccal centre and lingual embrasure so formed as to allow foods, during mastication, to slide over and not irritate nor injure the inter-dental gum crest.

The production of a properly formed cavity to receive a gold inlay, the correct carving and casting, cementing and filling, is work which requires the highest degree of artistic skill, and extreme care should be exercised at every step. Personally, I have obtained the best results by using what is known as the indirect method into which I will not go in detail. However, there is one point to which I wish to call your particular attention, and that is the tendency on the part of some operators to extreme mutilation of the tooth in preparing the cavity for the gold inlay, and the very bad practice of cutting away really sound tooth structure because apparently it can be replaced so easily. Sound tooth structure is the most precious thing in the mouth and this every operator should conserve to the utmost during every carving process.

CEMENTS.

The careless manipulation of cements has possibly caused as many inlay failures as all other sources combined. In the manipulation of this material, cleanliness is of major importance, for if the slab or spatula retains any portion of a previous mixture, it must spell defeat. The fluid and powder should be widely separated, and no area between the two contain any half mixed material. Of course mixing should be done rapidly and smoothly, and the temperature of the slab and spatula be the same.

I would strongly urge that one brand of cement be adopted by every operator. He then learns the peculiarities of this brand, and in so doing results must, of necessity, be more uniform. Personally, my office has used one brand since 1898, and we see no cause for change. I believe the hydraulic cements are always preferable. By "hydraulic" I mean a cement which just as soon as it begins to set, the saliva or moisture should be allowed to come in contact with it to make crystallization perfect.

In setting inlays and crowns, there is sometimes a slight seepage of moisture around the gum margin. This is easily controlled by the application of a ten per cent. solution of trichloroacetic acid,—the excess of this material of course being carefully wiped off before the cement is introduced.

In conclusion, let me say there are many things in operative dentistry not covered in this paper. However, it was not the intention of the discourse to make an exhaustive study of every operative procedure.

Rather has its object been to narrow the discussion down to the two very important points of filling material and diagnosis. Its purpose is accomplished if any word has been said which may inspire the operator to a most careful consideration of the filling materials as indicated in each individual case, as well as a close study of every mouth as an entity before any operative processes are established.

Resolutions Drawn Up by the Dental Hygiene Council of Massachusetts and Adopted by the Massachusetts Dental Society, May, 1926



HEREAS—Up to the present the attention of Dentistry has been centred mainly on the work of restoring lost dental tissue; and

Whereas—The only hope of real progress lies in the prevention or early control of dental disease; and

Whereas—Prevention, to be effective, must be applied early in the life of the individual—and early in the life of the tooth; be it

Resolved—That Dental service must begin early and be systematic and periodic in order to obtain the maximum of prevention with the minimum of operative work, and to properly educate the child in habits of Oral Hygiene; and be it

Resolved—That in the aim to attain prevention of systemic and dental disease—

(a) No defect is too slight to receive definite attention.

(b) The temporary tooth should receive as much care as the permanent ones in order to promote the proper development of the jaws and head, and to maintain function.

(c) Particular care and attention should be given to developmental pits and fissures, whether occurring in primary or secondary teeth, or whether decay is or is not present; and be it

Resolved—That the Dental Hygiene Council of Massachusetts declares for the principles and practice of Children's Dentistry, and maintains that the most effective dentistry that can be done for any individual is the service rendered between the second and fourteenth years of age; and be it

Resolved—That this Council calls upon all dentists to uphold these fundamental principles, and to do everything possible to promote the practice of Children's Dentistry by professional and public education, and in public and private practice.

Principles of Curriculum Construction in a College of Dentistry

By AUSTIN G. SCHMIDT, LOYOLA UNIVERSITY, CHICAGO.

[The members of the dental profession generally will be much interested in this paper and discussion presented at the last meeting of the American Association of Dental Schools, held in Chicago, March, 1926,

In the raising of dental educational standards that has occurred in all of the dental colleges in the past five years numerous changes in the curricula have occurred and it is well for the dental profession, as well as the teachers, to give renewed study to the principles involved, that the present advanced position of dental education may be better understood and consolidated. It is also desirable that greater uniformity be established among the dental departments of the various universities and colleges of Canada and the United States.—Editor.]



SOME months ago the dean and faculty of Chicago College of Dental Surgery, the Dental Department of Loyola University, invited the co-operation of the Department of Education of the University in the task they had set themselves of readjusting the curriculum to meet new requirements and ideals. This problem has been foremost in our minds during the year, and has been the subject of discussion at numerous conferences, committee meetings, and gatherings of the professorial staff. Our aim has been to make note of current tendencies that are both strongly marked and progressive, with a view to determining whether our own technique is keeping pace as it should with the advance of contemporary education. The purpose of this paper is to describe some of these modern tendencies, and to consider to what extent they should influence dental education.

One of the first facts that challenge our attention is this, that there exists everywhere in America a growing respect for a college education as a foundation for professional work and a stronger and stronger determination on the part of the public to demand some college training of all those who act as custodians of its bodily or mental health. Dentistry has always stood high in the respect and admiration of the American people, but its opportunities to-day are far wider than they ever were in the past. The discovery of focal infection; the knowledge that a full set of natural teeth contribute to health, happiness, and longevity, while morbid conditions in this area may be the cause of serious systemic disorders; finally, the conspicuously honourable and helpful work of dentists in school clinics—all this has given our people a better apprecia-

tion of the place of dentistry as a public health service, and has led them to expect of you a still broader education in preparation for the discharge of your new responsibilities. Even though a college training had no value in itself, it is being demanded to-day of professional workers of almost every type; of teachers, even in the elementary grades; of school nurses; of school psychiatrists; of instructors in institutions for delinquents and subnormals; of physicians, of course, and trained nurses; of workers in the field of recreation and physical training; and if it is not now required of all these professions in all parts of the country, it is at least recommended, and the imposition of the requirement is contemplated. Whatever, then, may be the merits of a college training in itself, it is inconceivable that dentistry should hesitate to use it as a means of maintaining its position as a profession of the highest order, especially at a time when your opportunities for winning the confidence and respect of the public are more abundant than they have ever been in the past.

You are, in fact, definitely committed to the policy of requiring one or more years of college work, and the only question is how to make that work result in greater good.

If some college training is for the future to be an essential part of the professional education of the dentist, it seems to me desirable that we should have some comprehensive, constructive policy in regard to the matter. What this policy might be, I will endeavour to indicate by stating three facts and a conclusion.

The first fact is that a thorough college training—the mastery of one or more foreign languages; the rigorous discipline of pure mathematics and science; the broadening, cultural, humanistic influence of literature, philosophy, ethics, and the social sciences—is a true, proper, and effective preparation for specialization and for substantial accomplishment in any line of intellectual endeavour. The college-bred man will be quicker to comprehend your lectures, to master your instructions, and to acquire, I will not say more digital skill, but digital skill directed and protected by an observant and reflective mind.

The second fact is that the American arts college of to-day—I speak of private as well as of state institutions—is not effectively conferring this culture. It opens the door to it, but it is not forcing the student to enter in. One can lack both the willingness and the ability to work, and still be admitted into and graduated from the American arts college of to-day. Our colleges are filled with gentleman idlers. The elective system invites them to secure a smattering of many things with real mastery of nothing. The American ideal of democracy makes us feel that we must accept all who wish to come, and then we must lower requirements and simplify our presentation in order to keep the number of failures within reasonable limits.

The third fact is that the mental discipline of the college, which at best would be none too good, is not even had in its entirety by students of dentistry and medicine. Our American school system is so organized, and requires so many years of study, that it seems socially and economically impossible to require students to earn their bachelor's degree before beginning their professional work. And so, instead of demanding four years of college, we demand only two, or even one. And during these two years, or this one year, we have the student take his chemistry, physics, and biology, formerly taught in the dental school itself, so that, if he receives sixty hours' credit in his pre-dental work, only about half of it, or thirty hours, can be looked upon as the distinctive, exclusive contribution of the department of arts and sciences. Gentlemen, this culture of which we speak, this superior power to reason and reflect, is a thing that can come only as a slow growth. We believe that, if you give us control of the child until he is eighteen or nineteen, leaving us free to use the means we wish, we can develop and deliver back to you a man who knows how to work and how to think. But those fifteen or thirty semester hours which you ask us to give the student are no magic elixir, capable of transforming the ordinary plodding intellect into the mind of a Plato, an Archimedes, or a Bacon. Remember, when your students come over to you from the campus of the arts college, that the college has had but scant opportunity to do for them what it would like to do.

These are the facts; and the conclusion is that we must all work together to devise means of graduating students from college at an earlier age, and of graduating them with a greater amount of culture. This reform will not be accomplished in one year, or two years; but it may be accomplished in ten or twenty years, if those who are interested will think about it and fight for it.

Nevertheless, the college training you plan to give will do much good, even though it could and should do a great deal more. The principle we have determined to follow is to have faith in it, and to speak well of it, and to avoid hindering it in the production of its proper effects. Hence, if a subject is cultural, we intend to leave it cultural. We will teach English, not dental English. We will not endeavour to introduce a utilitarian, professional element into studies meant to be humanistic. On the other hand, we want the professional or quasi-professional subjects taught with a dental bias. We do not wish to see the basic sciences taken out of the dental school and transferred to the arts department, and then have them taught in such a way as to disregard the interests and needs of the future student of dentistry.

The second strong tendency we observe in contemporary education is that of subjecting all the studies of the curriculum to a scrutiny as close

and scientific as we can make it, in order to determine whether they really produce the good that is claimed for them.

There is always a tendency for the school to introduce more subjects and topics, and for the individual professor to attach greater and greater importance to the course he is teaching. The writers of text-books, as a rule, are not chiefly concerned with producing books containing the essentials so chosen and arranged as to give the pupil what is most necessary and advantageous. Rather, their inclination is to include every detail, every bit of information, however recondite and unusable, so that their own scholarship may impress the world as irreproachable and all-inclusive. Our curricula have become overloaded with encyclopedic details; the student is often subjected to such a multiplicity of demands that he can not possibly do justice to all his work; and all the sciences are advancing so rapidly that the situation, unless carefully controlled, becomes constantly worse instead of better.

One of the most fundamental principles of curriculum construction is that curriculum-making must always consist of three steps. First, we determine what type of student ought to be produced. Secondly, with all the care and wisdom possible, we select what strike us as the best means for producing this type of student. And thirdly, we study our results, we examine our product, in order to see whether the means chosen do as a matter of fact produce the results we expected of them.

A very great amount of fine, scientific work has been done along these lines in the last ten or fifteen years. The effort has consistently been to eliminate what is superfluous and to strengthen what is most necessary. In 1913 a committee on economy of time reported to the National Education Association, describing the methods that could be used to secure the readjustments and the simplification which we all feel to be desirable. Since that time innumerable analytical studies of courses have been made with a view to showing precisely what is being taught, what purposes underlie the selection of topics, what elements might be omitted and what other elements need to be added. The results of this widespread movement can be seen from the fact that the Research Bulletin of the National Education Association for September, 1925, contained a list of no fewer than 924 revised courses of studies published by cities since the beginning of 1923. A committee has just completed the task of revising the curriculum for nursing education; and Dr. Charters helped by a subvention from the Commonwealth Fund and assisted by a large number of experts, has been working during the past four years on the pharmacy curriculum. Your own Association, as evidenced by the papers to be read at this present convention, is desirous of making a similar study of the dental curriculum. What, then, are the things we need to know in order to make this study

command the respect of our colleagues in the general field of education?

Let me begin with a statement which may strike you as strange. It is this: that age and youth ought to work together. These studies of objectives and of the contents of courses, these statistical reports of results achieved, these revisions of curricula are very largely the work of younger men. In only too many cases these men received during their university training an altogether exaggerated idea of the superiority of the so-called new, modern, and progressive tendencies in education. Sometimes they seem to assume that all education prior to the year 1900 or thereabouts was plunged in Stygian darkness. They have all been trained to use statistical methods; they talk in terms of medians, sigmas, and coefficients of correlation—a weapon as strange and terrible to educators of the old school as the musket was to the savages who had to defend themselves with bow and arrow. But, gentlemen, a man who has given his life to this task, who has been a sincere and honest worker, and who has had opportunities of observing the behaviour of graduates in their professional work—this man, I say, even though he can not talk the modern lingo and can not use the modern yardstick with which we do our measuring, deserves to be looked upon as an expert in his field; he is apt to be right without knowing why he is right or being able to prove it mathematically; his opinions deserve respectful attention, and the man who brushes him aside is not only rash, but also unscientific.

Nevertheless, the older and more experienced man is only human after all; he has his limitations; the world advances and science develops new techniques; he can learn something, if he will, from the methods that have sprung up since he was young.

What are these methods? First of all, just as a specialist who is called in for consultation demands the patient's clinical history and makes a careful study of his hospital records, so the first thing we want to know about these studies is just exactly what is happening in them. We want a detailed statement of what you are teaching and what you are doing. We want a catalogue of all the pieces of information you require the student to commit to memory and of all the things you make him do with his fingers. Then we take this list, and we go out and make a job analysis of what dentists are actually doing. We may, for example, ask a number of dentists to take our list and check off the things which they find they are using in their practice. Or we may employ experts to stand by the chairs in the clinic and make a list of the pieces of information and the skills that are evidently required. Or we may have a research worker go through senior year over again, noting all the things taught in freshman, sophomore, and junior years that are apparently presupposed, referred to, or required. In this way we identify

a great number of elements that are certainly necessary. For example, as far as information is concerned, we are satisfied that every dentist ought to know what agents should be used to sterilize an infected area; and as far as skills are concerned, we are satisfied that every dentist needs to know how to prepare cavities of different types in such a way as to get good anchorage. There can be no debate about information and skills that are evidently required in practice.

But now there will remain a large number of elements that we did not find used. What shall we say of them?

In the first place, the fact that a thing was not used does not prove that it should not have been used. It might possibly happen that dentists were filling and extracting teeth without any attention to orthodontia, articulation, or preventive dentistry; but that fact would not be evidence that such things should be neglected. If such cases occurred, we would collect evidence to prove that injury was done because of the neglect of the information or skill of which there was question; and then, instead of dropping it from the curriculum, we would devote even more attention to it than we did in the past.

But even after all this is done, there will remain many things that are not used. And here is the important point. These things are things which nobody claims to have any intrinsic value. Their purpose is to develop in the student some habit, some ideal, some interest, some form of digital skill. Thus, you have students shape instruments from blanks because you think it gives a better knowledge of stresses; and you have them carve teeth from bone because you feel it bestows a better sense of dental contour.

What method is to be used in settling questions such as these? The only thing we can do is to attempt to measure the extent to which the habit, feeling, or power is actually developed, and to compare the method we are now using with some other method which might be more effective and economical. For example, we might test students to see just what changes were effected in them while they were spending sixty hours carving teeth from bone, and we might compare them with other groups who had worked in some more plastic material, such as wax, to see which group made the greater progress.

Everyone who has mastered the technique of measurement in education without thereby losing his perspective and his common sense knows and must admit that such investigations and experiments are extremely delicate, and that the results are rarely conclusive. The reason is that everything depends on the accuracy of the measurements, and that the tests we use for this purpose are at present very crude and imperfect. Yet such experiments do much good. Why? Because, first of all, a man can never study anything intently without learning something new. These

experiments force us all to think harder than we did in the past. Take my own subject, for example—educational psychology. If nobody restrains me, if nobody challenges what I say, I will make my subject spread out more and more until it requires twice as much time and energy on the part of the student as it did in the past. I will become eloquent, promising power of every kind to those who study it for six semester hours and predicting failure and ruin for those who neglect it. Now what happens if some of these scientific investigators demand an accounting from me? Am I not forced to examine more minutely into what I am doing? Am I not required to consider more carefully the various benefits I have been claiming? Is not my attention directed to the means I have been using to attain those ends? In short, these scientific studies may not completely solve a problem, but they do let in a great deal of light. They cause us to do all we can to substantiate personal opinion by objective facts, which is the prime duty of every man of science. They give us a new interest in and enthusiasm for our work: they improve our technique; and, even though the data they yield are incomplete and inconclusive, they do provide a certain amount of useful information and lead us forward in the way we wish to go.

Let me say if you wish to improve dental education, if the records of the past contain any message for us, it is that the only way lies along the path of scientific investigations of the thing that you are doing. That is the way we have made such remarkable advances in elementary and high school education, and that is the reason the American college of to-day is just about where it was, as far as technique is concerned, fifty years ago, because there has been practically no experimental investigation of the worth of the methods in the college.

Do you really need to teach all the subjects you have been teaching, or as much of them as you have been teaching? This, it would seem to me, is the question whose study would be of most benefit to you. Every type of education that wishes to be considered in harmony with the times must bring before the bar of educational theory and scientific measurement each subject and topic of the curriculum, to determine whether that subject or topic is usurping time to which it has no right, and even whether it ought to remain in the curriculum at all. But all this should be done in a kindly spirit, a brotherly spirit. Such an investigation ought not to develop into a battle royal, in which every man is against his neighbour. The existence of a subject in the curriculum creates some sort of a presumption in its favour. If we tell a professor that his subject must come out, or be given less time, because he has not provided experimental evidence of its utility, we are inconsistent unless we ourselves provide evidence of the utility of the thing we wish to put in its place. This effort at curriculum revision is not a struggle of

professors, one against another. It is rather a struggle of all the members of the staff, united in a fraternal spirit and inspired with the one purpose of doing what is best for the student and the profession, to solve the pressing problems of economy of time and effective presentation. If every man will look upon himself, not as a sentinel guarding his subject, but as the one chiefly responsible for keeping it within proper limits, and co-ordinating it with other subjects, and making it subserve the best interests of the school as a whole, then he will find that others are more inclined to make the concessions he wishes; and, more important still, he will be in a mood to see what is objectively right and to be guided by the real needs of the student rather than by his enthusiasm for the subject of his own specialization.

The securing of good sequence is a matter that is receiving much attention in the drawing-up of curricula; but, as this is a principle thoroughly understood by all, I will pass on to another closely connected with it; namely, co-ordination.

There is a tendency on the part of us professors to become so engrossed in our own subject as to act as if other subjects did not exist, or had no value. Sometimes we go so far as to make it a point of pride, and to consider it evidence of genuine scholarship, to disclaim the right or ability to answer a question in any field outside our own. "That is out of my field; you must ask Doctor X," is the answer frequently given to inquiring students. Now it does not produce a good impression on students to learn that we, who have practised and perhaps are practising our profession with honour and success and who are considered sufficiently learned to teach in a dental school, can afford to be ignorant of things which they as students are required to know. Moreover, the subjects we teach are not, and should not be, so many independent, isolated units. Professors ought to know the important topics in other courses that can be anticipated, illustrated, or reviewed in their own courses. Students are very favourably impressed when a professor refers to topics treated in other courses and shows the application of these topics to his own matter or of his own matter to them.

Another principle which has been applied in Chicago College of Dental Surgery for some time, and with very satisfactory results, is that of intensive treatment. It has been found better to give to a subject, for example, twelve hours a week for eight weeks rather than to give six hours a week for sixteen weeks. Like all other pedagogical principles, this one must be applied with discretion. Too much concentration is undesirable, for the student requires leisure to study, reflect, and assimilate. But provided the load is not made too heavy, it has been found that greater interest and application result from pitching in vigorously and mastering comparatively few things at a time.

We are also considering what we can do to make better provision for individual differences. There is abundant evidence from both the psychological laboratory and the classroom that some students can do three, four, or five times as much work as others, not only quantitatively but also qualitatively. No doubt your own experience has been that some of your students have been capable of completing the dental course in three years with a perfection not attained by others in four. There is no harm in having a student spend a certain number of months on work which he could complete in less time, provided he is constantly acquiring knowledge or skill that will be useful to him. For this means no more than that one student derives more profit from a course than others do, which is a situation that will always prevail in education of every type. But it is a different matter when the student has acquired all that is really desirable and is forced to mark time while the average and inferior members of the class are completing the work assigned. In such cases it is desirable to substitute for the regular didactic or clinical work something of a more advanced character. There is no question of shortening the prescribed curriculum, but there is the possibility of organizing special problems, both of a theoretical and a practical nature, with which superior students can be kept occupied to their own benefit. The effort to do so is in harmony with the best educational procedure of the day.

Finally, the schools of America, including the colleges, are developing a keener realization of the fact that the spirit and ideal that animate a curriculum are just as truly a part of it as are the studies whose names appear in the printed catalogue. It is everywhere admitted that we must not simply teach history, but that history which develops the historical sense; not civics, but that civics which results in an ideal of patriotism; not English, but that English which lays the foundations of true culture; not dentistry, but that dentistry which adds to technical skill an ideal of civic service. Dentistry is more than a means of earning one's living. It is a science that places a man in the ranks of thinkers, of contributors to the general welfare, of creators of a newer and better civilization. The dentists we wish to produce are to be men of refinement, culture, studious habits, moral rectitude, and of generous and noble impulses and aspirations. No one can doubt that the men who have taught in our schools of dentistry have done much by the silent force of their example to develop these ideals in students. But we shall fall behind schools of other types, we shall fail to catch the fine spirit which now animates American education, if we do not feel that it is right and desirable to add to this silent example a frank, outspoken, and constructive effort to inculcate the ideals which we consider necessary. Let us remember that our students are for the most part still in the formative stage. Sophisticated they may be, or seem to be; wise in the

ways of the world; satisfied with themselves and sufficient unto themselves; more skeptical than confiding, and more inclined to scoff than to be impressed; yet beneath this exterior lie the fine virtues of your American manhood—its plasticity, its ability to be impressed, its altruism, its idealism. We ought to be fathers to these young men; and we ought to teach them, not only their profession, but the virtues proper to their profession. Here at Chicago College of Dental Surgery we have given no small thought to this problem during the current year. We have drawn up, working together, a tentative set of ideals which we consider suited to dental students, and we are expecting to take definite steps to bring these ideals to the notice of the student body and to encourage their acceptance. If nothing else comes of our efforts, we shall at least be in possession of a code of ideals which each professor will, in a quiet, unobtrusive way, endeavour to popularize by some tactful remark when the opportunity presents itself.

These, then, are some of the principles that seem to us of importance in improving the dental curriculum. I am fully cognizant of the fact that nothing I have said is new. One purpose of these conventions is to remind ourselves of what we already know. Let me say in conclusion that it has been an inspiration to me to have had the opportunity of working with these zealous and progressive leaders in your profession, and that my one regret is that I have not been able to bring to you as much as your example and knowledge have brought to me.

DISCUSSION.

Dr. F. T. Breene: Mr. President, Father Schmidt, Ladies and Gentlemen: When an association is permitted to listen to a scholarly paper on principles of curriculum construction, as presented by Father Schmidt, can there be a doubt of the usefulness of a cultural, humanistic or classical education?

Father Schmidt has outlined and suggested many ways of approach in the consideration of what should be done in the construction of curricula.

I will attempt in a brief discussion to present some of the factors that influence the arrangement or rearrangement of a dental curriculum.

It has been my privilege to be in contact with dental education as an instructor for nearly thirty-five years. I have passed through the periods of attendance requirements of two sessions of five months, three of six, three of eight, and four of eight, and admission requirements of evidence of birth to the present educational requirement. (Laughter.) My observations during this period have convinced me that the greatest handicap of the average student is his inability to concentrate on his problem and use his mental faculties for reasoning instead of memor-

izing. If this observation is correct, it must be vital. But what is the remedy?

From the time of Adam and Eve, the progeny produced has been seeking, seeking for somebody or something for the purpose of placing the responsibility for error. The professional schools blame the colleges and high schools, the high schools the intermediate and elementary grades. Parents blame the teachers, and teachers the parents. This leads us to conditions that are confronting dental and medical education to-day.

How many years of collegiate training is required to train the high-school graduate to concentrate and to reason? Will one or two years' collegiate training serve the purpose? Who knows? This is the point.

We are on our way, and do not know where we are going. A doctor of philosophy purchased his ticket and entered the Pullman. The conductor requested his ticket. After a thorough search, the doctor decides that the ticket is lost; the conductor demands that the fare be paid to the intended destination. The doctor replied, "I would be willing to do that, but I have lost my ticket and do not know where I was going." (Laughter.) With all of the doctor's attainments, he would not be a safe abdominal surgeon.

From the evidence at hand at the present time, it appears that at least one year collegiate training is acceptable and necessary. But the opinion of those versed in academic education is that collegiate instruction of one academic year does not fulfil the cultural and scientific educational intention, and that two years' instruction is better than one, and that four is better than three. In other words, the dividing point is between the second and third years.

Will two or four years' college work prepare the student for the course in dentistry?

We have no reliable information as a basis for insight or guidance of prospective professional students. What is more needed by professional schools than some means that will assist in the selection of students for the work at hand or indicates the trend of their talents?

At present it is—Have you the educational requirement and the tuition fee? In many instances the boy would have been better off if he had lost his money in an oil-stock investment.

Dr. Fishbein, editor of the *American Medical Journal*, in an editorial, January, 1925, expresses the following:

"A few years ago blame was placed on inadequate pre-medical training in explanation of the shortcomings of the modern physician. An increase in the number of prescribed courses in science demanded by the better class medical schools naturally followed. Now we are told that it is becoming more and more questionable whether the added requirements are producing the desired results. The latest critic asserts

that since medicine is an art as well as a science, the cultural subjects and the humanities should be given greater consideration than they now receive. The implication is, Koch adds, that the scientific instruction is the important phase of the pre-medical training and that nothing else matters. While this may be true, so far as immediate needs go, it is equally true that such reasoning ignores the needs of the future. Both types are certainly essential, and neither can replace the other. Whereas too much emphasis on the scientific side tends to make the student an unsympathetic and 'cold-blooded proposition,' the broadening influence of the other subjects, Koch continues, makes for a humanized being.

"It is perhaps easy to place too much emphasis on the method of training and on the detailed content of the preparation for the practice of medicine. The subject has become cyclopedic in character; and the mastery of every chapter, item after item, can be resolved into a mere memory stunt. A comparison of the 'learning' that a dozen highly successful physicians were forced to acquire through the medium of curriculum prescription would probably show surprising diversity. It is undoubtedly true that students can be well grounded through the medium of many courses. Cushing stated before the Annual Congress on Medical Education at Chicago in 1925 that experience has shown that it perhaps does not make any very great difference, provided Nathan Smith is on one end of the log, with the right kind of students, and not too many of them, on the other; and that we are pressing for formulas to solve something for which there is no formula. The personal equation of the teacher does not appear in the syllabus issued from the dean's office, though it is known in every students' boarding house."

Passing from the pre-professional phase of education to dental education—the dental curriculum of the present has been constructed on principles of the medical curriculum. I believe it is recognized that we have followed it so closely that methods of instruction have been acquired that are antiquated.

My personal opinion is that the dental curriculum should go through a process of re-orientation. This should result in better instruction and a saving of time. Do not infer that this saving of time means to the writer that the dental course should be changed from thirty-two months to twenty-four months, but the time saved should be utilized to educate the dental student in the fundamental and applied medical sciences, thus enabling him to speak the same language as the physician.

We hear that the social status of the dentist is not on the same plane as the physician. In your community and my surroundings the dentist is not a social outcast, he is accepted socially and goes where other good citizens are permitted to go. But does he speak the same professional language as the average physician? The answer is no, and the reason is

that he does not obtain sufficient education in the medical sciences. The dentist, an oral expert, should be able to distinguish normal function from abnormal function, normal tissue from abnormal tissue.

Physiology is the science of bodily function. Is it possible to teach a dental student one-half or less of an acceptable course in physiology or pathology and produce a diagnostician that can intelligently distinguish normal from abnormal?

In a bulletin of the University of Minnesota, December 10, 1924, the following statements are published, quoting Dr. Gies:

"To think of dentistry as merely a mechanical art requiring little or no medical education or training is as unintelligent and as uninformed as to assume that abdominal surgery is nothing more than a mechanical art.

"Promotion of the public welfare requires that specialists in the prevention, cure and correction of dental and oral disorders must be as responsible, intelligent, well-educated, thoroughly trained and broadly experienced in their art as any other type of practitioner of health-service. The dentist should be as competent to understand and to perform the health-service duties of dental practice as an eye, ear, nose and throat specialist in his particular field.

"Dentistry can be made much more effective than it is by improvement and extension of the medical phases of its service."

Do we know that the desired improvements can be accomplished in twenty-four months of dental instruction? Can dentistry be made much more effective than it is by improvement and extension of the medical phases of its service by reducing the time for instruction? We do know from experience and trial that we should attain satisfactory results in from thirty to thirty-two months' instruction.

Much has been said and written about the defects in medical teaching. Has this Association accepted this warning and taken advantage of the knowledge that should be gained by observation? Quoting from report of President Pritchett, 1921: "Perhaps no defect in the medical school makes a sharper impression on the lay visitor, familiar with the quality of teaching in our more serious colleges, than the lack of good teaching. . . .

"The medical curriculum to-day represents the conception of teaching of a half century ago improved by certain laboratory procedures superimposed on it. What is needed is to abandon this conception entirely and to plan a medical curriculum afresh in the light of present day knowledge of medical science and of medical education. Whatever agency may undertake this task must have the courage to do two things; first, to reduce the load laid upon the student to a point where he may have time to think and to digest in some measure the studies with which he is concerned; and, secondly, to scrap the present rigid curriculum. . . .

Perhaps only a new medical school will have the courage and initiative for such a step."

President Butler in his report of 1921 discussed medical education: "Medical teaching is, however, in need of very severe critical examination on the part of those who have a sound knowledge of educational processes and educational experience.

"The true aim of the medical school should be to give instructions in fundamental principles and methods, to bring the student in contact with realities, to train him in the habits of observation and inferences . . . and to give him knowledge of where to look for the additional or specialized knowledge that he may need. . . . Moreover, it must never be forgotten that the purpose of the medical school is to train physicians and not scientific investigators. It would be a sorry day for public health and for the public satisfaction if the physician of large practical experience, wide human sympathy and keen insight into human nature were to yield his place to the expert with the microscope and the test tube."

Has this Association as an educational body seriously considered the future of dentistry, the future of dental education? We are concerned with the problems of the present. But what of the future? What is our objective?

Would it not be advisable to apply industrial business principles to education and at least visualize future developments?

Have we measured by using modern methods the necessary content of the dental curriculum? Is there correlation and co-ordination?

Have we investigated newer methods of instruction? Are these methods adaptable to dental instruction?

Have we made a real effort to investigate methods of student selection and vocational guidance?

Have we outlined specifications that will aid in solving our problems?

The hazard is too great to decide that we will reach our destination in three hours. While we do not know the distance to be travelled, it would seem that we should investigate methods, make adjustments and improve our curricula, then adapt the time to necessary content and not content to time.

I am of the opinion that Father Schmidt will agree to this statement: that a thorough job analysis of the dental curriculum and the specifications developed would be instructive and of practical worth. It would seem that the interests of this Association would be best served by the appointment of a committee on educational advancement or investigation, this committee to be empowered to consult with educational experts of the institutions they represent and to meet in joint conference when necessary. (Applause.)

Dr. Henry L. Banzhaf: I am impressed with Father Schmidt's paper

because of its scholarly character and because it deals with educational fundamentals. What we need to solve the problems concerning the education of students of dentistry is more of an application of general pedagogical principles. This has been one of our failings in the past, and it is a sign of progress that in late years we as dental educators have gone out of our way to invite the co-operation and aid of men who are trained in the science of pedagogy.

The essayist lays down certain fundamentals with which we should all agree. He points out the growing respect that exists in America for a college education as a foundation for professional work, and enumerates the increasing number of professions that insist upon this requirement. Such a training constitutes the most effective preparation for specialization and for achievement in any professional endeavour.

We have all observed that this is true of the occasional students who presented themselves to us in past who, either by accident or design, had attended a college of liberal arts for any considerable length of time before entering the dental school. Those of us who have been interested enough to examine into the records of the students who presented themselves with college training will agree with the essayist that these students are quicker to comprehend the work we assign them. While the speaker expresses some doubt as to whether this group of students could acquire a greater degree of digital skill, I desire to state that it has been my experience that these students are able to develop the requisite digital skill much more rapidly than their classmates who presented themselves with high school credentials only. The reason for this is that they were able, as has been so well expressed, "to acquire digital skill directed and protected by an observant and reflective mind."

I like this statement, because it expresses definitely in a few words the difference between the ordinary run of high school graduates and the students who have been subjected to the discipline of a foreign language or mathematics and to the broadening influence of philosophy or literature. These students have formed the habit of thinking, of reflection. Each task that is assigned to them (let us use a technique piece as an example) is approached with understanding and with searching for fundamental principles. The relationship of the problem on hand to the work that has gone before and to the work that is to come is more readily understood. Such a student, I have found, even in my short experience with the two-three-graduate plan of dental education, can make more rapid progress in technique, operative and surgical work, as well as in the medical sciences that are applied to dentistry.

I certainly want to take exception to the essayist's statement that the

American colleges of to-day are filled with gentleman idlers. I believe that this statement is altogether too broad. I believe that there never has been a time in the history of our colleges and universities when there has been a more serious effort made on the part of the administrative authorities to rid their respective institutions of their deficient students. I share his disapproval of too wide an application of the elective system, but I maintain that the proportion of students who are wasting their opportunities is smaller to-day than ever before. I do not believe that standards are lowered in any college or university worthy of the name for the purpose of keeping the number of failures within reasonable limits. On the contrary, the freshmen classes are purged of their incompetents and hundreds of students are returned to their homes permanently at the end of each semester. Our standards are higher, our rules with respect to the elimination of poor students are more rigidly enforced, and our students are better prepared by their pre-professional liberal arts college work for the professional work that follows.

I do not agree with the speaker's pessimistic view that the arts college can do but little to train the intellectual powers of a student in two years' time. I will agree that but one year of liberal arts work would leave much to be desired, because one year serves for hardly more than a good introduction—a good beginning. But I am having the definite experience in my own student body that a two-year preliminary course, consisting as it does of such broadening subjects as psychology, ethics and English; such disciplinary courses as college algebra; trigonometry and foreign language; and such exacting sciences as physics, biology and chemistry, not only produce a capable student, but one who can actually think as well as do.

Since I do not agree with two of the speaker's premises, I cannot agree with him that any very great problem exists with respect to the preparation of students for admission to the dental school that cannot be solved easily and immediately by all dental schools who will adopt the two-three-graduate plan of dental education. Schools that require each student to present two years of prescribed liberal arts work for admission need have no fear of the results, provided that they require, as do all medical schools, that the student must have maintained an average of at least C or Fair. Dental schools must not admit a student who presents credit for two years of work if his grades are poor, because a student who has done poor work in his pre-professional courses will invariably continue his poor work in the dental school.

I want to approve especially of the speaker's statement that the effect to be gained by cultural subjects in the pre-dental course should not be ruined by the introduction of the utilitarian or professional element. His statement, "We will teach English, not dental English," meets with

my particular commendation. I want to go further, however, and state that it is also wise to teach chemistry instead of dental chemistry, physics instead of dental physics, and so on. These sciences must be taught in the liberal arts college to get the full benefit from them. They cannot possibly, as the speaker seems to fear, be taught in such a way as to disregard the interests and needs of the future student of dentistry. Particular courses in dental techniques, radiology, dental metallurgy, and physiological chemistry will suffice to renew and review the student's general knowledge of physics and chemistry after the student enters the dental school, and supply such particular dental emphasis as seems necessary. The same may be said of biology or zoology.

I want to congratulate Father Schmidt for calling to our attention one of the most startling defects of the dental curricula in general. I refer to overloading. Examination of the bulletins of certain schools will reveal the fact that the student's attention is often scattered hither and yon over as many as twelve or even thirteen separate courses. How can a student expect to do careful, systematic work with such a handicap? He cannot do justice to his work. It is obviously much better to concentrate the student's attention during any given semester on five, six, or (if necessary) seven courses. Furthermore, I believe that it is better to assign the student to fewer class hours and to make each hour more thought-provoking than is the general practice to-day. Most of our present courses in dental techniques are ridiculously ponderous and overloaded, and we are too insistent upon the number of technique pieces rather than upon directing the student's thought to a few important fundamental principles.

The introduction of certain courses such as dental anatomy or prosthetic techniques into the pre-professional years, as seems to be insisted upon by a number of dental educators to-day, is a mistake. These courses cannot add appreciably to the student's knowledge. On the contrary, because of their character, they do a great deal of harm, for the reason that they divert the attention of the student from his chief purpose, namely, that of preparing himself for entrance into a professional school. The student will, in my opinion, invariably be misled into placing a false value on these smattering courses because of the fact that they seem to him to be of greater immediate importance. Thus the addition of these courses into the pre-dental years tends to defeat their purpose. Medical schools and law schools prescribe their entrance requirements, but they do not attempt to inject professional courses into the pre-medical or pre-legal years. Such dilution of pre-professional work serves no good purpose. And yet some dental educators are unwilling or unable to see the mistake that they are making.

A great deal of work, as is pointed out by Father Schmidt, can yet be done on the problem of correlation of courses, and I confess that I

have in recent years given more attention to this one problem than to any other that I can think of for the moment. There is hardly a general faculty meeting or a group meeting but that this problem occupies a major part in the discussion. About the only way that this problem may be met is to encourage free and full explanations and exchange of opinions among the teachers of a faculty. Thus the mind of any teacher is disabused of any mistaken idea he might have concerning the paramount importance of his course, and he becomes able, mentally and spiritually, to co-operate with his colleagues who are teaching other courses, and to dovetail his courses with the rest. He will be guided by the student's needs rather than his own personal opinions. In this way the "pressing" problems of economy of time and effective presentation that the speaker mentions may best be solved.

The formal educational survey that the speaker recommends would also be productive of much good, because it could not fail to bring to light many of the faults of the curriculum and the various courses. I see no valid objections to such an investigation; I certainly would be happy to have it made in the school with which I am connected, and I would expect to receive many helpful suggestions from it. Such an investigation would necessarily have to be made by experts who were familiar with dentistry and dental terms. I do not believe, though I may be wrong about this, that anyone trained purely in educational methods could make much headway unless he first spent a great deal of time in acquiring a knowledge of dentistry that would be more than merely superficial.

I wish I could take the opportunity to consider each point in this excellent paper, but I realize my discussion has already been too lengthy. While I was listening to the reading of Father Schmidt's paper, I caught one point which apparently I overlooked in the limited time I had in which to study his paper. Father Schmidt urges the beginning of a young man's life work at as early a period as is possible, and favours graduation from the high school and from the liberal arts college as early as is possible. I have always been interested in the European plan, and I certainly heartily agree with the suggestion made by Father Schmidt in this regard. I believe that it is one of the reasons why I am so jealous of what we do with our students' time, and why I am so much opposed to the plan of adding one year or two years to possibly five years on undergraduate work. I thought it was such an important point that I wish to make special mention of it. (Applause.) What the speaker said about giving the students with superior ability an opportunity to progress more rapidly than their slower classmates and not require them to mark time with the class meets with my hearty approval. Someone recently made the criticism of our American system of education that we spend so much time in polishing our pebbles

that our diamonds are dimmed. I would like, at some future time, to hear Father Schmidt or some equally competent educator present a paper to this Association on this particular problem.

Another matter that the speaker refers to is one that all of us should always be considering seriously, namely, the fact that we must impress our students with high ideals of living and of professional conduct. It is one of our most sacred duties, and one that I am always glad to be reminded of whenever I face a class of the young men who come under my instruction.

While I regret that I could not agree with the speaker in all of his conclusions, I am glad that these differences are differences of opinion only. I enjoyed reviewing his paper, and derived much benefit from the opportunity I had of analyzing it. Father Schmidt is indeed very modest when he makes the statement that he has brought us nothing new. I feel that all who have been privileged to hear this excellent paper will pardon me for differing with him on this point.

Dr. Jackson: Mr. President, Father Schmidt, and Gentlemen: It is certainly with considerable reticence that I take this rather formidable position, because this is the first opportunity I have ever had of meeting in conference with dental educators. I have had some experience in general professional education through my medical work, and I was certainly intensely interested in Father Schmidt's illuminative paper. It gave so much for thought that one really wonders where to begin.

There was one thing that is sufficiently general, perhaps, which would make me competent to speak—because I feel as yet incompetent on dental subjects—that is a matter which the speaker brought up concerning culture. Culture, of course, is something that we all hope to have, we aim for, and we would like to have all of our students attain it. It is a rather elusive sort of thing, very difficult to find. I suppose it is an attitude of mind, if nothing else; it is brought about through bringing many, many points of contact; by development, I think, of what the psychologists call apperceptive mass.

However, I believe that in attempting to develop culture we are perhaps more inclined to think in terms of years rather than in terms of training. As I look back upon the training that I had, which was supposed to be cultural, I sometimes wonder whether it really was, although the subjects might have been called cultural. I think that any subject can be made a cultural one, I don't care whether it is shop drawing, or shop working, or carpentering, or plumbing for that matter; it all depends upon the way in which the matter is taught and the breadth of interest which it develops in the student. If any subject is narrowly presented along just one narrow line, and the teacher himself is not cultured in the sense of having breadth of interest and being able to pull from the four quarters of the globe, so to speak, or from

every line of human endeavour, points of application for his subject, then he is not a cultured individual, nor will his subject be taught culturally.

Consider the three subjects taught in pre-dental years and pre-medical years, the great triumvirate of biology, chemistry and physics. Those subjects certainly can be taught culturally. Think of chemistry. Can you go anywhere in the world, or can you think of any form of human endeavour in which chemistry doesn't play a part? The same thing is true of biology certainly, and physics quite assuredly. Consequently it does not make any difference to me whether a student has had one or two years or three years or four years of college education. I have seen men come out of college (they have come out of my class) and they weren't any more cultured than a dog that could do a pretty good set of tricks. They hadn't become cultured, and all the infusion of cultural education that they were supposed to get in college didn't do them one particle of good. Think of the men who are cultured who have never been to college! Some of them have never even attended high school, but they have developed culture through their wide interest in everything that has come under their attention. That is what we must develop if we are going to develop culture—the man's interest.

Consequently, I would go back (I think it is a bad plan to blame somebody else; I think we ought to blame ourselves as teachers), and I would go right down the line, not only of professional educators, but college educators and high school educators. Really, culture should begin in the high school. I am in firm agreement with anyone who says the high school might well be cut to two years, or perhaps three years. There is so much lost motion there. You have all had experience with high schools through your children. Of course they vary. But when one sees the type of teaching and the lack of interest that is developed in the subjects that are studied there, one finds no culture at all. What is the reason? The fault lies with teachers. They possess no breadth of vision. They keep ahead of the class by a few pages, and that is about the extent of it. That is where the trouble lies.

You can say, "Oh, yes, you are passing the buck, so to speak, to the other fellow." But, nevertheless, that is the time when the child is beginning to develop methods of thought, and if slovenly methods are allowed in the high school, when that child comes to the college or to the professional school he is seriously handicapped. (Applause.)

Father Agnew: It occurred to me while the last gentleman was speaking, giving voice to what is certainly true, that culture can be had from the presentation of any subject if it is presented in a certain way that his observation was hardly practical in the work of curriculum construction. Culture can conceivably be imparted by the teaching

of plumbing, but it is only the extraordinary instructor who will impart the culture while teaching plumbing. The content of the subject itself doesn't necessarily involve the presentation of those things which generate culture; similarly with many other topics.

In the science of curricula construction you have rather to take into account what is ordinary than take into account the extraordinary. A man might teach literature and not develop culture. That is not due to the fact literature is not a culture subject, but it is due to the fact that the particular professor is of no account as a teacher and he has ruined his subject.

It would be a tragic mistake to allow ourselves to conclude from the observation of the last speaker that since culture can be had from anything, we need not care what is taught in any curriculum if we can only lay hold of the right kind of people to teach it. We have to assume that teachers are going to be good, and then look to the content of certain subjects which are more specifically cultural than others.

Now, from the definition of culture that the gentleman himself gave, it is obvious to anybody that English is a culture subject, and if it isn't spoiled by wretched teaching it is bound to develop a certain amount of culture. It puts one in an immediate contact with the thoughts and emotions of noble men. History, likewise, is a cultural subject, for the simple reason that it lays before one the whole development of civilization in its various forms—educational, political and social. Consequently, the student is necessarily exposed, in even a mediocre presentation of history, to a play of intellect and a play of emotion in a light which is bound to result in the formation of habits of mind and will; habits which aggregate to culture in the end.

I don't want to differ at all from what the gentleman said to the effect that culture can arise from any subject, yet it is a practical problem that confronts those building curricula, and there is a good reason why, assuming that the average professor is going to be a good professor, certain subjects have to be included and others cannot well be comprehended in any plan. (Applause.)

Dr. Wallace Seccombe: Mr. President and Gentlemen: I feel that one cannot be very modest and speak after the remarks of Dean Hipple. I have been very much interested in the discussion and in the statement, among others, that we should not speak of *dental* chemistry and *dental* physics. I am inclined to agree with that, but I believe it is quite proper for us to speak of *applied* chemistry and *applied* physics. We are not proposing to train chemists in a dental course, either in the pre-professional or the professional course, nor are we presuming to train physicists. I believe this is what Dean Jackson had in mind when he made reference to plumbing. Our study of chemistry, physics, biology,

or any of the sciences may be cultural, and while we are not attempting to make physicists or chemists, yet we may present these subjects in a way, not only to be cultural, but helpful in a dental course and with a view to making our graduates better dentists. For instance, in mixing a cement filling the dentist should have a knowledge of the chemistry concerned. That sort of chemistry is just as cultural as any other kind of chemistry. With all due regard to what Dean Banzhaf has said, applied chemistry may be taught in a dental faculty, and be just as cultural as the chemistry which students may obtain in a college of liberal arts.

Mr. President, there was one suggestion of Dean Breene's which interested me, and that was that a standing committee be appointed to make a study of these problems. I am pleased to have this opportunity of supporting Dean Breene's suggestion and also of complimenting the essayist. I consider this an excellent paper and very helpful. It is one, too, that we shall all look forward to reading and studying carefully when printed. (Applause.)

Dr. Logan: Mr. President: Dr. Schmidt has appeared before our faculty members a number of times and has given us an intensive study of this problem under discussion. The questions which confront us are: What about the practical application? How can education be presented to the student body most effectively? Many of us have felt that the time was now ripe for some of us who are teachers to learn more about pedagogic methods. Father Schmidt has been of great assistance in aiding us in the investigation of plans for teaching, the selection of subject-matter, and the deletion of antiquated technique. For example, we are not certain that we have always coordinated the work in our technique and science laboratories with that in our clinical departments. It would seem that every institution could well afford to devote time to serious thought in making a survey of the subject-matter presented, and to so adjust the technical, scientific and clinical requirements that they will bear a proper relation to the length of time allotted for their execution. It is apparent that this will require considerable time in order to work out a correct adjustment, but it does not matter whether it takes two, three or five years, if necessary, if it will result in giving us a better and more efficient method of presentation of the subjects covered in our dental school. That is the practical problem which faces us, and we have begun with the education of our faculty first. With that as a foundation, we will proceed with our student investigation under the direction of our essayist.

Dr. Pippin: Mr. President: I want to say a few words in congratulation of the essayist of the afternoon on the generalities of curriculum building. For about three years and a half I have hoped

to hear something more on specific curriculum building. Sometimes I think we forget what dentistry stands for. We forget that dentistry is, and should be, a specialty of medicine. We had hoped to have information long before now upon which the dental profession could unify upon a minimum curriculum. By that I mean a curriculum that all schools could agree upon, and if any schools wanted to go beyond that, that would be their privilege.

To my mind, the curricula of the dental schools of the country to-day are in more of a chaotic state than they have ever been in the history of the profession. We have all kinds of curricula, and everybody seems to want his own curriculum. Everybody seems to think his curriculum covers the subject. We don't know who is right, and I wonder how much longer we will go along in this chaotic state.

There are those who say the two-three plan is the thing we want. Perhaps they are right; I don't know. There are others who say the one-four plan is correct. Maybe they are right. There are others who say the two-four plan is correct. Who knows but what they are correct? There are those who believe that the cultural subjects should be interwoven with the scientific subjects or the professional subjects of dentistry in such a fashion that a man after four or five years of professional study will meet himself coming into the college with his requirements for entrance.

Dentistry, to my mind, as has been laid down in the premise of the investigators of dental education by the Carnegie Foundation, is and should be a specialty of medicine. I believe that is correct. But when you come to the point where it is to be the equivalent of a specialty of medicine, there is where the trouble starts. To my mind, the curriculum that should have been established long before now, a minimum curriculum, should be such that if we are to consider dentistry only as the equivalent of a specialty of medicine, dentistry should have that curriculum which would be no less in professional requirements and professional attainments and cultural values than are obtained by any other specialty of medicine.

We don't know where we are yet. Every fellow is going on talking on generalities, and we never seem to get down to brass tacks. We are in the position of a little boy who had a calf and desired a yoke of oxen. He didn't have the second calf, so he hitched himself in with this calf and called himself and the calf a team. The calf got scared and started to run away, and the father saw him and said, "Where are you going, son?"

He said, "I don't know; ask the calf."

We don't know just exactly what we are trying to do. We haven't set upon any unified curriculum. A curriculum in generalities

has been nobly presented here and that could be talked on at every meeting from now on until doomsday. We will all agree upon generalities, but we haven't come down to the adoption of any one curriculum as being the requirements that dentistry should have in order to measure up to the expectations of humanity which we are supposed to serve. We seem to think that as long as we can perpetuate dentistry as an institution, and as long as we can have jobs to hold, we are doing all that is necessary. I want to say to you that humanity is to be served, and there is a greater work to be done by this institution than we have so far accomplished, and that is the co-ordination of medicine and dentistry for the better service of the human race.

Medicine is getting little of dentistry and dentistry is getting more of medicine. We have not co-ordinated the two professions on the basis where humanity is being served or can be served in the future as it should be. Medical men are ignorant, on the whole, of dental sciences, and dental men, to a large extent, are ignorant upon many medical subjects. But we will say that dentists, to my mind, are better medical practitioners than physicians are dental practitioners. There is a happy meeting ground for consultation, whereby humanity can be better served. I wonder how much longer we are going to wait for this mutual understanding. Somebody speaks of another committee to investigate dental teaching. Why another? The Carnegie Foundation took it upon itself to investigate dental teaching some four years ago, and we have been waiting for the complete report and the recommendations. So far we haven't it. To my mind, if we had the investigation made as Flexner made it for medicine, regardless of anybody's school, regardless of any individual whom the report might not favour, and if that report were unbiassed, giving just exactly the conditions as they are found in all dental schools in the United States and Canada, and then the investigators stepped aside and let the profession consider the recommendations of that committee which it would see fit to make as to the future of dental education, we should not be in the chaotic state we are in to-day regarding our curriculum, and humanity would be better served than it is going to be served in the next few years because of the condition in which we find ourselves. (Applause.)

Dr. Ward: Mr. President: I had not intended to discuss the paper but the last speaker seemed to arouse my interest in it a little more than it had been before. His reference to the chaotic condition in the profession leads me to reminisce a little. I am obliged to say that the most wholesome condition this Association has been in for years has been indicated here to-day, in my opinion, by the willingness to experiment and put ourselves in a chaotic condition. I am happy—indeed, I am very happy—that everyone has shown the interest that they have

in this meeting, an interest in such generalities as the essayist has presented here to-day. There isn't a question in the world, in my mind, that dentistry, with its tendency to get together, for which it has had a reputation for many years, its tendency to clean its own house every time it has been shown how, will certainly go ahead and do it this time. That tendency is going to carry us right through. There isn't a thing in the world that is going to stop it.

The fact that we may have twenty-five different curricula to-day has little or nothing to do with it. I have the same situation as the previous speaker has. We don't know whether to teach the laboratory in physiological chemistry or physiology, knowing that we cannot do both, any more than some of those who are here know whether they should have dissection that covers the entire body, or if some of you should teach quantitative analysis, or whether a dozen and one other things should take place; but I do have confidence in the attitude of this Association this afternoon that gradually we will get to the point where we will know. I am not alarmed, not in the slightest degree, over the situation to which he calls attention. (Applause.)

Father Schmidt: Gentlemen, do not be distressed because you are in chaos or because Dr. Banzhaf refers to the two-three plan, or somebody else refers to the one-four plan, and the St. Louis University prefers an undiluted five-year plan with gobs of culture sprinkled here and there over it. There is only one country in the world in which there is education of any extent in which there is not chaos, and that is China. (Laughter.) To have chaos in education simply means that different people are doing a thing in different ways.

In our great zeal for the welfare of the young who are entrusted to us, we want to find the best way. No doubt there is some best way, although perhaps no one way would be the best in every one of the States of the Union or in schools of every possible type. Perhaps there is no one best way for the United States of America, but certainly the fact that we have two or three ways shouldn't distress us. Don't let that distress you, don't let that make you unhappy. As long as the human intellect has the infinite power of learning in different ways and at different levels and through different media, it will always be possible to educate that intellect in different ways. Therefore, the blessing I wish you as I leave you is that you may remain cheerful amid these present current controversies as to the one-five, two-three, two-four, one-two-three-four-five and such other plans as may be suggested to you. The fact that you have three plans does not prove that you are in the dark, or that you are doing things in the wrong way.

Why Preventive Dentistry is Not a Vital and Active Factor in the Dental Profession*

THADDEUS P. HYATT, D.D.S., F.A.C.D.



It has been difficult to select a proper title for my paper. It is my purpose to try and explain why a certain mental attitude and a certain psychology is found in our profession, which inclines men to disregard the importance of early treatment of non-carious pits and fissures. This mental attitude commences with the student during his college life and generally stays with him throughout his professional career. This mental attitude is also helped by the respect given for certain types of operative work because of its artistic merits and because of the mechanical ingenuity and skill shown. It is also based on the fact that the vulnerability of pits and fissures make these places far more susceptible to caries than is generally realized.

The relation of dental work to the health of the individual is not fully appreciated because not understood. This is largely because until recent years dental problems have not been included in public health work. Therefore, it has been quite natural for a large part of our profession, and for many of our colleges to view the entire subject of dental services from the mechanical and scientific side, rather than from the health point of view.

Another factor which has made it difficult to secure the co-operation of dentists, for children's work, lies in the fact that until recent years there has been no special course devoted to child problems. Students as yet not perfectly skilled in the technique of operative work or of handling patients are permitted to work for children. Conscious of his inability and shortcomings, embarrassed by the publicity of a dental infirmary, the student is badly handicapped when the child is frightened, unwilling or unable to respond to his direction.

It is doubtful if many of the students have ever studied child psychology, or, if they have been given the opportunity to become acquainted with their little patients in congenial surroundings before taking the child into the operating room.

We can picture the child's first entrance to the dental dispensary of the average college. There he finds patients of all kinds; men with swollen faces; women suffering pain; all in one big waiting room. There the child sits in nervous dread of what may happen to him. Soon comes a strange man with a white jacket and tells him to come this way,

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and he is led into a large room with many chairs. He hears someone cry out in pain. He sees men moving around. To the child's mind confusion reigns supreme.

Unless the student is a child lover, and has understood child life before entering college, is it any wonder that he will be incompetent to handle this child, and in fact grow to dislike having to do anything for little children?

Such a student's whole professional career will necessarily be built on the desire for the easier work, the more artistic work, and to him the more satisfactory work of making gold inlays, bridges and porcelain jacket crowns for adults. What a delight and what a triumph to have succeeded in creating a beautifully artistic piece of prosthetic work which goes to place, and with little or no trouble. Can we not see the other students crowding around him and admiring his skill and ability, as well as his artistic taste?

Can we imagine that such a student after graduation will have in his cabinet fine pointed sharp explorers for the purpose of detecting small and insignificant pits and fissures, which will only require pin hole fillings and probably only be filled with amalgam? Can we not picture him constantly on the lookout for an opportunity of making a Carmichael bridge or a beautifully constructed movable-removable bridge? Do we find at dental meetings men bringing samples of their pin hole fillings nicely polished? Is it not rather the usual thing to find men bringing samples of M-O-D gold inlays or a fine piece of restorative work to replace teeth which have been lost because of our profession's lack of interest in children's work along preventive lines?

But this is the dentistry of the *past*. The dawn of a new dentistry is now appearing.

The great work of the present day, within the colleges, and within the rank and file of our profession, is to create and build up a new psychology, which will give recognition to dental work done from the health point of view; to secure the admiration of our confreres, when they see a piece of work in the mouth which they recognize at once will maintain the integrity and vitality of the pulp, and thus show greater promise for the retention of all the teeth for the life of the patient. We cannot expect to do this in one day, a month or even in one year, but all men who are interested in the building of an ideal and who are willing to work for the dental health of mankind should co-operate and stimulate the principles of preventive work for children. Our colleges must undertake as rapidly as possible the providing of a separate reception and operating room for little children.

No student should be allowed to handle a child before he thoroughly understands the psychology of children. No student should be allowed

to *practise* on a child. No child should be used as a subject for a student to *develop* a technique. No student should be permitted to work in a child's mouth if he has not passed an examination showing his technical ability in all kinds of operative work, and which he has learned and acquired by working on models, manikins and adults.

Our profession and our colleges must recognize that though a pin hole filling is in itself a simple operation the performance of this operation on a little child requires the highest and finest technical skill and knowledge.

To have acquired the ability to operate in the Children's Clinic should be considered the highest honour the student can win. It should be made a necessary requirement for graduation.

The crowning success and the highest ideals to be obtained as the result of the training and education in any dental college should be the ability to handle little children and to so successfully practise preventive dentistry that pulpless teeth will become such a rarity that when one is seen it will cause amazement and astonishment. Such an attainment is both practical and possible.

In my paper I have endeavoured to show *why* the ideals of preventive dentistry are not a vital and active factor in our profession. I have endeavoured to do this without adverse criticism because I fully realize this entire subject is only a necessary and logical step to a bigger and a better appreciation of the relation existing between dental service and health of the community.

With this introduction, Mr. President, I will now read my paper.

Our profession has long recognized the fact that well shaped and well formed teeth have a greater resistance to caries than poorly formed or badly shaped teeth, or teeth with imperfectly calcified enamel. Dr. Miller writes, "This resistance depends to a certain extent on the structure of the teeth, on the perfection of its external enamel crust, the enamel cuticle and on its freedom from fissures, cracks or weak lines as are produced by uncalcified prisms" (1). Dr. Bunting writes, "The teeth themselves must be well formed, with hard, smooth enamel and free from deep pits and fissures" (2).

Mr. Broderick of Bournemouth, England, has devoted much time and study to what are the effects of calcium metabolism on the teeth, and he "considers that the integrity of the enamel is the all important thing. If this is sound no caries can occur, but if one little speck of dentine is exposed, caries does occur unless prevented by the skill of the dentist" (3).

Knowing this and knowing also that deep pits and fissures are vulnerable areas which are always liable to decay, it is strange that our profession and our colleges have not taught this truth in such a way as to

make the practice of treating these places before decay starts more universal.

Dr. Pickerill of New Zealand writes to me that the treatment of fissures was taught, when he was at college in London 25 years ago, and many other Professors of Operative Dentistry in the colleges of our own country write and tell me the same thing.

This being true, it is hard to understand why so many have greeted the proposal for treating these pits and fissures *before decay starts* as something strange, radical or startling. In the State Examination papers which I have had the opportunity of seeing, no questions are asked regarding pin hole fillings in the treatment of fissures, or even the treatment of caries in its incipient stage. How can the importance of this work be believed in by our graduates when it is so thoroughly ignored as a *requirement* for their graduation?

Perhaps one of the explanations for this is because the theories of susceptibility and immunity being dependent on mouth conditions have been too readily accepted, as final and correct. Dr. Black in his paper on "Susceptibility and Immunity to Dental Caries" (⁴), writes as follows: "Local immunity from caries in mouths in which caries is progressing is constantly before us. When we take account of those positions on the surfaces of the teeth where caries is liable to attack them, and in which we are constantly observing the attacks of caries, we see at once that there are widespread local immunities of regions in every mouth. In this case caries is destroying the bicuspid and molars leaving the incisors untouched. In the second case the upper incisors are being destroyed, leaving the molars free. In many instances the proximate surfaces are attacked, while the buccal and labial surfaces are free from caries; while in certain proportion of cases it is the buccal surfaces that suffer especially. Can this be on account of difference in the tissues of the teeth in the special localities? Is not the cause of this difference much more likely to be found in the environment of these particular localities, to something in the position that favours the building of the microbic plaques in the one place and is unfavourable in the other?"

As in the children's game of "Hot and Cold" Dr. Black was getting "Warm." It is doubtful, however, if the localization of immunity or susceptibility to caries can be given so large an area as to include certain *regions* of the mouth as suggested by Dr. Black. Statistics do not support the statement that "In the second case the upper incisors are being destroyed leaving the molars free." An examination of over 5,000 charts does not show *one* case where "the incisors are being destroyed leaving the molars free."* Also it is very doubtful that when proximate

*From April 1, 1926, to July 1, 1926, 5,235 patients have been examined in the Metropolitan Life Insurance Dental Clinic and not one case found.

surfaces suffer, buccal and labial surfaces are free; or that when buccal surfaces of molars suffer, we shall find the lingual surfaces of molars free. It is far more likely to be found, that when one surface has been affected and caries has entered into the dentine, there will be a greater susceptibility of the entire tooth to decay. This greater susceptibility of the entire tooth increases the vulnerability of the other surfaces, and they will break down more readily when exposed to danger.

Regarding the localized group of immune teeth in certain regions of the mouth Dr. Black asks, "Can this be on account of differences in the tissues of the teeth in these special localities?" My reply is No; the difference is not in the tissues of the teeth, nor even in their structure, but the difference is in the perfect or imperfect form or shape of the tissues of the teeth.

Of course, poorly calcified, or incompletely calcified tissues will more rapidly break down when the shape or form of certain parts is such as to afford protection for the undisturbed retention of acid forming bacteria. The "difference in the tissues of the teeth in the special localities" is not the primary reason for their immunity; but it is their shape and form which, permitting better freedom from the attachment of the bacterial plaques, lessens their liability to decay.

It is questionable if the calcification of any tooth is harder and more complete at the time of its eruption than is that of any other tooth; yet there are some surfaces which show a far greater immunity to dental caries than other surfaces. As an illustration of this we note how seldom is caries found in the lingual side of upper laterals and how far oftener is caries found in the occlusal side of molars; yet in every case it is doubtful if there be any difference in the density of calcification of the teeth at the time of their eruption.

In reply to Dr. Black's question, "Is not the cause of this difference much more likely to be found in the environment of these particular localities, to something in the position that favours the building of the microbic plaques in the one place and is unfavourable in the other?" my reply is an emphatic Yes; but the size of the environment or of the locality is very much smaller than that which is implied by Dr. Black. The reason for the different degrees of localized immunity or susceptibility to caries is not related so much to the different *regions* of the mouth, as it is related to those environments which are circumscribed by the anatomical shape and formation of certain parts of the enamel, and also to certain tooth surfaces, which, because of their confinement or distance from the friction of mastication and of tongue and cheek movements, are not easily kept clean.

The *largest dimensions* of any *environment* for caries of the teeth, is the *environment* circumscribed by or enclosed in the interproximal spaces.

The greatest *number of environments* in which caries start are those which are confined within the limits of a fissure, a pit or deep narrow groove. This is the "position that favours the undisturbed retention of the bacterial plaques and gives the needed protection for the beginning of decay."

Another reason why our profession has not made greater progress in the adoption of some operative procedures for preventive purposes which should be applied before decay starts, is owing to the teachings and the generally accepted theories of "*personal immunity*" and of "*personal susceptibility*." We have not realized the value of preventive work in the little areas of susceptibility *before decay starts* as being operative work of the greatest importance in the prevention of pulp pathosis and in the maintenance of mouth hygiene and general health. We have not studied the immune surfaces of the teeth with the idea of finding out how to treat the other surfaces so as to make them easily kept clean and thus make them also immune. We have neglected to attend to the little areas of liability *before decay starts*, while endeavouring to accomplish the larger and more difficult task of regulating and controlling "*personal immunity*" by research work in diet, ductless glands, saliva, etc.

The number of persons who are immune to dental caries is so small, being less than one-twentieth of 1%, that it is useless to consider "*personal immunity*" as being a factor of any importance when deciding what treatment should be given to enamel defects in children's teeth.

While we cannot ignore the fact that certain systemic conditions bring about lowered resistance to disease and that while the patient suffers from this lowered resistance there is greater susceptibility to dental caries, we must notice that when caries does develop it will always be found within certain well defined areas of the tooth, and that these areas are those which are known to be vulnerable. We shall also find that those areas which, to all intent and purpose are properly called immune, are the areas in which decay seldom starts, even in cases with lowered resistance and even when caries is present elsewhere in the mouth.

Our profession has so long believed that the environment brought about by the contents of the entire mouth is one of the greatest factors in dental caries, that it has neglected to attach much importance to certain anatomical formations as being the real environments for most of our dental troubles. Many of the leading writers on dental caries have emphasized this. Dr. Black and other writers on dental caries have stated again and again that it is not the condition of the teeth that makes them immune or susceptible, but it is their environment. That Dr. Black meant the entire mouth and the contents of the mouth as constituting the environment is generally understood; and I have received letters from Dr. Arthur Black, his son, and also from Dr. Kirk stating this to be

the case. This is all the more interesting and surprising when we realize that Dr. Black has stated truly, "It is well demonstrated that the whole saliva never becomes sufficiently acid to act on the teeth, and that so long as micro-organisms have no protection from the dissipation of the acids they form they cannot produce caries" (5). Inasmuch as several thousand bacteria will find sufficient space on the point of a pin to localize and function, the environment for their protection does not need to be very large.* We can thus understand why pits, fissures, deep narrow grooves or those surfaces which cannot be kept clean by mastication or by the friction of the tongue and cheeks, are the favourable environments for the undisturbed protection of the bacterial plaques; these are the environments within which 99% of all decay is found.

With floss silk it is possible for the patient to keep the interproximal surfaces clean and thus reduce the number of interproximal carious cavities. The reduction of interproximal caries is largely the patient's responsibility. No patient, however, can keep the pits and fissures clean; therefore, the reduction of caries in pits and fissures is our responsibility.

We find no records of research workers having made any systematic and scientific effort to control the influence of the bacterial contents of the mouth by immunizing the teeth. They all admit the inability of the free bacteria, or of the free acids of the mouth to cause decay. They all affirm that before decay can start it is necessary that the bacterial plaques shall have protected and undisturbed attachment to the tooth. Is it not strange that while admitting these facts, almost all the efforts of research workers in dental caries have been directed to the discovery of what particular kind of bacteria does the damage? Why spend thousands of dollars trying to find a way to kill something which is harmless, if there are no places in which that something can lodge, and remaining there undisturbed can then start decay?

After many months of careful research work on the bacteriology of dental caries Dr. Bunting tells us "It would appear, then, that if this organism plays an important role in the process of tooth caries, its activity is determined not so much by its presence in the mouth as by the environmental conditions that determine the degree of its proliferation and localization in contact with tooth tissues" (6).

It is not necessary to take exception to anything Dr. Bunting has written in this very interesting and painstaking report; but permit me to call your attention to two significant statements. One I have already read. The other is "considerable confusion may arise in such studies from the difficulty of determining the degree of susceptibility of certain

* "In a fissure 0.07mm. x 1mm x 5mm. we find 2,800,000,000 bacteria. If the fissure is 0.26mm. wide instead of 0.07mm. it would contain 8,400,000,000 bacteria."—Charles F. Bodecker, D.D.S., F.A.C.D., Professor, Dental Histology and Embryology, Columbia University Dental School.

mouths to dental caries at any given time. It is possible that there may be a large number of open cavities in the teeth, but at the time of observation the original causative factors may have disappeared *and if the cavities are filled the progress of the disease may spontaneously cease.*"*

In the discussion that followed the reading of this report, Dr. Bunting admitted that the acids used on extracted teeth are much stronger than is found in the mouth; Dr. Buest questions the species of bacteria mentioned in the paper; Dr. Larson states if a tooth is put into a solution of over 20% sodium oxide we get erosion of the enamel surfaces; Dr. Howe differs as to the classification of the bacteria, and Dr. Bunting again asserts that "It appears that the environment has a great deal to do with the overgrowth." We cannot help noticing that no attention and no consideration was given to where or what these environments are, and what are the possibilities of eradicating them.

Dr. Black's statement that imperfections such as pits and fissures are causes of caries, *only* because they offer the opportunity for the active forces of decay, has been interpreted by most readers and writers on dental caries as meaning that these pits and fissures are really quite unimportant. Walkoff (7) seems to hold the same opinion; having noticed that the defective calcification of the enamel of apes remains immune to caries he concludes that such defects are much less important than has been supposed.

From what I gather in a review of the literature on the etiology of dental caries, practically all modern writers are agreed that defects such as pits and fissures are of secondary consideration. The really important subjects to be studied are diet and what particular bacteria it is which does the most damage.

We all agree on the importance and value of proper diet in the building of perfectly formed teeth before their eruption, and on the relation of proper diet to already erupted teeth in regard to the maintenance of the general health and vital resistance. We must not overlook the fact, however, that the task of changing the food habits of an entire nation is very difficult and probably several generations must pass before it will become an accomplished fact.

Research workers in dental caries are bending every effort to find which of the different varieties of bacteria found in the mouth or on the teeth is really the guilty party, and how the mouth can be kept free from this dangerous foe. This absorbing and exciting chase after the elusive bacteria is still kept up in spite of the fact that there are certain localities and formations of the teeth which laugh at the free bacteria of the mouth, knowing that Williams and Black have told the truth when they said the free bacteria in the mouth can do no harm. In spite of

* Italics mine.—T. P. H.

the different varieties of bacteria; in spite of their great number; in defiance of the dangers from their acid secretions; these immune areas still keep their "shapely forms" and still remain serenely immune.

The imperfectly formed enamel of our country cousins, the hairy apes, is sadly lacking in the virtues of immunity when once it is exposed to the dangers of bacterial acidity found in the mouths of the children of our present civilization. These are the openings through which the bacteria gains entrance and thus starts decay within the portals of the tooth's structure. Guard then these openings before the foe enters and then the teeth need fear no foe regardless of what his name may be. No need of scarlet, green, or emerald blue, to protect the perfect form of immune and immunized surfaces.

Instead of these defects being unimportant, know there is rarely any decay when they do not exist, regardless of the bacterial contents of the mouth. The variations in the bacterial content of the mouth in different persons is not sufficient to explain caries. The difference in the shape and form of the teeth in persons with little or no caries, is very marked, when compared with those who have much decay.

How can we explain the difference in the number of carious cavities in the lingual side of upper and lower laterals, when the bacterial content of the mouth is the same for both? Do we not find a large proportion of upper laterals have lingual pits while the lower laterals have none? Do not these pits perfectly comply with all the rules and regulations laid down by Williams and Black? Do not these pits provide the ideal environments for the undisturbed retention of the bacterial plaques? Then, inasmuch as the free bacteria do no harm to the lingual surface of the lower laterals, but do harm when provided with the ideal environments in the form of the lingual pits in the upper laterals, it seems to me that these pits are a far greater necessity for the successful starting of dental caries than are the bacteria themselves. If this is true, then all funds for research work should be devoted to finding the simplest and most perfect procedure for the treatment or removal of these important factors which are so necessary for the successful work of these tooth destroying bacteria. It must be understood that at all times I have recognized and do recognize that neither pits nor fissures nor any other imperfections or malformations of the enamel are the *cause* of caries. There is a vital factor which we call resistance. We know very little as to how this vital factor works or what this resistance is.

The important fact to understand, and to thoroughly appreciate in this study of dental caries and the *possibility* for its *prevention* is to remember that when caries does occur we will always find the largest number of carious cavities in the pits and fissures. The next important fact to be remembered is the question of immunity of persons to dental caries.

We must learn that for all practical purposes there is no such thing as dental immunity for children in our present state of society.

Many research workers believe that calcification and hardening of the enamel continues after eruption. Mr. Caush states that "Caries is either rapid or slow according to the amount of calcification that has taken place in the enamel; hence the more perfect the calcification, the slower the progress of the disease" (⁸). If this is true, then every enamel defect or deep groove which makes possible this undisturbed retention of the bacterial plaques should be treated as soon as possible after the eruption of the tooth and before decay has entered the tooth. This should be done for the reason that calcification, being less dense when the tooth erupts, more rapid destruction can take place.

With the exception of the mesial surface of the permanent first molars, children do not usually suffer from interproximal caries. With pits, fissures and deep narrow grooves properly taken care of, with proper mouth hygiene taught the child, and with good health and proper diet, there will be fewer teeth lost, and pulp involvement will then be a rarity.

Of course we all realize for such a plan to be successful it is necessary that certain operative procedures be evolved and perfected. It then will be taught in all dental colleges. It then will be made a necessary requirement for graduation, and also for passing State Board Examinations.

In closing, permit me to call attention to one phase of this subject which I believe is often overlooked.

Mr. Tyson in the *British Dental Journal* (⁹) makes the following remark in reference to Prophylactic Odontotomy: "We certainly do not practise it in clinics, because we have no time for it." Others having expressed the same opinion I am obligated to make some reply.

It is hard to understand how anyone can fail to realize that a great many hours are practically wasted in making large compound fillings, capping pulps, treating pulpless teeth and filling roots. I have said wasted hours, because our profession has had so many failures with such treatments. By failures I mean that the great majority of these teeth are finally extracted. How different are the results obtained with pin hole fillings. These we find last indefinitely. Teeth with only pin hole fillings rarely have any pulp involvement.

Any procedure which promises the need of only small simple fillings; any procedure which can show that such fillings are practically certain to last indefinitely; any procedure which promises pulp protection and the minimum possibilities of pulp pathosis, because no decay has entered the dentine of the tooth; such a procedure must be the greatest of all time-saving methods known to us. Add to this that such a procedure is based on the following facts:

1st.—The knowledge of the vulnerability, liability and susceptibility of certain areas of the teeth to caries.

2nd.—The knowledge that it is possible to protect the large majority of vulnerable areas so as to make them practically immune because easily kept clean.

Such facts should be sufficient proof that just as soon as dental clinics for children are established on this basis, and this procedure followed that then there will be sufficient time to take care of double, if not four times, the number of children than is possible with our present methods.

To do this successfully certain rules and regulations will be necessary, the most important being that the child must be brought to the clinic within six weeks after the eruption of the teeth. It will also be necessary to educate the physicians and nurses as to the practicability of preventive dental work and the necessity of doing this work as soon as possible after the eruption of the teeth, and thus secure their co-operation. With this co-operation, with this procedure followed, may we not hope that twenty years from now an examination will show the young man and woman of that day having all their teeth present and no pulp involvement? Then, it will be possible for our profession to show proof of the value of our services to mankind.

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LOCAL ANAESTHESIA.—To prevent pain in cutting down upper bicuspid for Carmichael crowns, inject beneath the fascia over the apices of the bicuspid roots and massage for a few moments. The upper buccal bony plate is so thin over these teeth that thorough anæsthesia can usually be obtained in this manner.

Lecture by Doctor Gottlieb.

AT UNIVERSITY OF TORONTO.

 R. BERNHARD GOTTLIEB, Director of the Research Laboratory of the School of Dentistry of the University of Vienna, who has been in the United States and Canada this summer, gave a lecture recently at the Faculty of Dentistry of the University of Toronto. The alumni of the College were guests of the Faculty on this occasion which was largely attended.

Dr. Gottlieb is considered to be the most eminent authority in Europe on the Pathology of what is commonly called Pyorrhea Alveolaris. He has come to Toronto to confer with Dr. Harold Keith Box of the Faculty of Dentistry, who is widely known in the Dental Profession on this continent for his studies in this field.

In his excellent lecture Dr. Gottlieb presented several new concepts regarding the nature of the changes which lead up to the development of Pyorrhea. He began by showing the successive stages of the development of the gums as the teeth are erupted. He stated that as the tooth comes into the mouth, the gum progressively draws back from around the crown. Together with this, the attachment of the gum to the tooth shows a gradual tendency to progress toward the root. This tendency is continued throughout life with a varying rate of change so that in some cases the gum attachment may approach the apex even, without showing marked signs of disease.

At the same time at which the gum attachment is progressing toward the apex, the tooth is continuously growing out of its socket. Dr. Gottlieb calls this Continuous Eruption. He states that it proceeds at a different rate in different people and also at a different rate in different parts of the same mouth. In other words some teeth erupt faster than others, and in some people's mouths the teeth erupt more rapidly than in others. He states that there is no time during life when eruption entirely ceases. This is a new thought in Dental Science, for it has previously been held that the teeth normally erupted to a definite point, and that when this point was reached the teeth became stationary.

When a tooth erupts beyond a certain point the pressure on this tooth becomes greater than it had been before that time. This increased pressure which Dr. Gottlieb, in agreement with Dr. Box, calls Traumatic Occlusion, causes injury to the bone and membrane around the tooth and is an important factor in producing disease of these tissues. When man lives a primitive life, the vigorous mastication which this mode of living requires, causes the wearing down of the teeth

and through this wearing down the pressure which would otherwise be excessive, is kept within normal limits. Dr. Gottlieb says that the continued eruption of the teeth is nature's provision for maintaining natural level of the grinding surfaces to compensate for wear.

Now that civilized man so seldom produces this natural wear, we find that the continued eruption which still takes place is a source of danger. Thus, in the treatment of Pyorrhea, it is almost invariably necessary for the dentist to grind the teeth to an extent which would bring them to the level at which nature can tolerate the pressure which is brought upon them. Dr. Gottlieb says that this grinding must, in many cases, be done at least in slight amount, every six months.

Another concept of Dr. Gottlieb's which is new in this country is that new layers of cementum, which is the covering of the tooth root, must be laid down as the tooth erupts in order to maintain the length of root requisite for providing the leverage which will support the pressure of mastication. He regards this as a very important element in the maintenance of health in these tissues and regards research looking toward a means of encouraging this growth of cementum as an important part of the scientific study of this disease.

Dr. Gottlieb showed some very interesting stereoptican slides illustrating the various points in his lecture. It is a very striking thing that Dr. Gottlieb presents a view of the nature and treatment of Pyorrhea Alveolaris which coincides closely with the concept held by Dr. Box of the Faculty of Dentistry. The fundamental unity of their ideas makes it clear that the most trying period in the study of Pyorrhea has been passed and that further research can now proceed along the lines laid down by these investigations with assurance that the principles of treatment advocated are correct.

After Dr. Gottlieb's lecture was concluded the audience was addressed by Dr. Harold Keith Box, Professor of Periodontia, in the Faculty of Dentistry, and by Dr. John Oppie McCall, Professor of Periodontia and Dr. Paul R. Stillman, Clinical Professor of Periodontia in New York University College of Dentistry. Dr. Stillman and Dr. McCall were in Toronto to confer with Dr. Box and Dr. Gottlieb.

At the conclusion of the addresses a hearty vote of thanks was tendered to Dr. Gottlieb by those present.

MAKING INSTRUMENTS.—Probes of any desired shape or angle or fineness may be easily and quickly made out of old excavators as follows: Heat and straighten the excavator and reduce it to a fine point by revolving it against the side of the grinding wheel, then re-heat and bend to the desired shape, harden, temper and finish.—*British Dental Journal*.



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Provincial Editors will appreciate receiving from all local societies copies of papers, society proceedings or personal notes, for publication.

♦ ♦ ♦ ♦
QUEBEC.

MONTREAL FALL CLINIC.

THE second Annual Meeting will be held on November 1st, 2nd, and 3rd, and the Clinicians are, as usual, men of international reputation, all of them having been prominent Clinicians at the International Dental Congress in Philadelphia in August.

Efforts are being made to have Dr. Truman Brophy, Chicago, give a lecture, and if possible he will give an address before the whole meeting.

Dr. Willis A. Sutton, Superintendent of Schools, Atlanta, Ga., the layman who has done so much to interpret the dental needs of school children to America, will give several talks, explaining their methods and their wonderful results.

Clinicians will be:

Dr. J. Oppie McCall, New York, who will give a practical Clinic on "The Treatment of Pyorrhea." Dr. Theo Maves, Cleveland, "Preparations on Vital Teeth for Bridge Abutments, with Fundamentals of Crown and Bridge Work." Dr. Wm. Harper, Chicago, "Modern Amalgam Technique." Dr. H. Spalding Both, "Preparation of Vital Tooth for Porcelain Jacket Crown," by aid of motion picture and table clinic.

The cost of the Clinic, including the banquet, will be \$25.00. The number attending will be limited to two hundred. Applications with cheque should be made to Dr. W. C. Bushell, Medical Arts Building, Montreal, P.Q.

FALL GOLF MEET.

DR. RALPH EDMISON won the Cup for the best score and Dr. A. W. McClelland for the second time won the Cup for the best net score, at the Fall Golf Meet.

The Tournament was held over the "sporty" course at Whitlock, on the Lake of Two Mountains, and, under the direction of Drs. Hutchison, Laurin, Cleveland and Saunders, was a very happy event.

* * *

Dr. F. H. A. Baxter, this year, won the first place in the Veterans Section of the Province of Quebec Lawn Tennis tournament.

* * *

SOCIETE DENTAIRE DE MONTREAL.

ATHE regular meeting of the Societe Dentaire de Montreal was held at the Faculty of Oral Surgery, Universite de Montreal, on the 4th of September. Twenty delegates from France, Belgium, Portugal, and Haiti were the guests of the Society. Doctor Frison, Dean of the Ecole Dentaire de Paris, and Emile Huet from Bruxelles, were the speakers of the day.

The following were unanimously admitted as honorary members of the Society: Drs. Antoine Blatter, Paris; Leon Frison, Paris, Maurice Roy, Paris; Elei Fourquet, Paris; Emile Huet, Bruxelles; George Villain, Paris; Albert Joachim, Bruxelles; Henri Joachim, Paris.

Sunday at 1 p.m. the delegates were the guests of the Society at a lunch given at the Cercle Universitaire. Among those present were Drs. Villain, Badock, Blatter, Fourquet, Machari, and Frison, from Paris; Joachim and Huet from Bruxelles; Piquet from Lausanne; Nazaretto and Hill from Portugal; Thebaud from Haiti; Dr. Dubeau, Dean of the Faculty; Dr. Charron, President of the College of Dental Surgeons of Quebec; Dr. Lantier, President of the Society; M. Morand, Consul of France, and many others.

PAUL GEOFFRION,
Secretary.

* * *

ONTARIO.



ON September 28th the members of the Hamilton Academy of Dentistry gave Dr. O. S. Clappison a complimentary dinner, and presented him with a beautiful radio set (Stromberg-Carlson).

Quips, stunts, hoaxes and witticisms were features of the farewell dinner at which the presentation was made, held at Bessey's Hotel, on

the Lake Shore Highway. Dr. J. N. Stewart occupied the chair, and the address, paying splendid tribute to the personal and professional merit of the departing doctor, was delivered over the very radio which was to be presented, by Dr. F. P. Moore. Dr. Moore in the course of his remarks said that "in this day and generation it is indeed heartening to find occasionally, here and there, a man prominent in the life of a community or profession who has the respect and confidence of all with whom he has contact. To-night we meet to honour one who has ever had before him, professionally and publicly, the *Vision Splendid*. He has never skirted the hard places on the road to his objective, has never been so busy keeping both feet on the ground that he has feared to take a step, but has gone forward hopefully and has now arrived, for he believes in the things that count and fears not to say so. He believes that 'Service is the rent we owe for the space we occupy,' and his rent is paid.

"Spence Clappison's work, the result of his ever constant effort in behalf of his chosen profession, has dignified it, has brought to him and to it, here and on the North American Continent, the respect of the members of our profession, and has placed it on a high plane in the matter of ethical endeavour. His voice has been, and will ever be, lifted in affirming the reply to the query, 'Is it right,' as opposed to the popular query, 'Will it pay?' He aims not to please, but to enunciate flat truths unmindful of the world's opinion. He goes from us to be colleague of a master of our profession, to perfect his own knowledge, already great, and to obtain inspiration and guidance in his study of age-old truths.

"Conscious of the fact that life, at most, is all too short to permit the fulfilment of the vision that Spence has, we, his colleagues of the Hamilton Academy of Dentistry, have thought it only fit that we should have some part in the conservation of the time that remains to him, which we trust may be indeed lengthy in point of years, and so it is my privilege to-night, with the loving regard of all his colleagues who know him and, knowing him, understand him, to present to him this radio set. That it may bring to him much of the wisdom of the world, a little of its nonsense by way of relish, the available items of current interest and, always, the evidence of the respect, appreciation and sincere regard of the donors, who will follow with interest, appreciation and pride a career that will surely reflect its lustre on his one-time co-workers in the profession of dentistry."

Among the guests were: Dean Seccombe, of the Faculty of Dentistry, University of Toronto; and Dr. Fred J. Conboy, Director of Dental services, Department of Health, Ontario, both of whom spoke in glowing terms of Dr. Clappison. Dr. Fred Capon, of Toronto, Dr. Clappison's future partner, was also present.

Dr. Clappison, in his response to the address and presentation, expressed his gratitude to the Society for its generosity and good wishes announcing his intention of continuing his connection with the Hamilton Academy of Dentistry.

—W. G. T.

* * *

EASTERN ONTARIO.



THE Dental Study Club of Ottawa continues this fall with the following as an Executive: President, Dr. L. E. MacLachlan; Vice-President, Dr. J. J. Lonergan; Secretary, Dr. I. W. Hamilton; Executive, Drs. H. Winters and Jas.

Guthrie.

It is with great pleasure that we are able to state that Dr. S. W. Bradley is now convalescent.

The Ottawa Dental Society opened its regular winter session on October 12th. All those giving talks during Dental Health Week presented their addresses as a "dress rehearsal."

Dental Health Week programme was fully carried out in Ottawa under the direction of a committee convened by Dr. W. C. Macartney. The Kiwanis, Rotary, Gyro and Lions Clubs were addressed by Dr. W. A. Armstrong and Dr. C. H. Juvet. The dental films were shown in practically all the theatres, and an exhibition of educational and health films, free to all children, was put on by Manager Don Stapledon at the Centre Theatre, on Saturday morning. This gathering was in charge of Dr. H. Winters.

Through the courtesy of the Public and Separate School Boards, prepared addresses were read by the teachers in all the schools. The Kiwanis Club, through Dr. Macartney, chairman of their Educational Committee, presented a series of prizes for the best essays on Dental Health, based on the information given in the addresses at school and at the Centre Theatre.

The French-speaking dentists of Ottawa have received permission from the Separate School Board to do so, and have undertaken to deliver a lecture each week to the Separate Schools during the coming winter.

The druggists of the city co-operated greatly by putting in special window displays, and a prize was offered by the dentists for the best display.

Radio Station CNRO co-operated by broadcasting a talk by Dr. W. C. Macartney. CKCO, the station of the Ottawa Amateur Radio Association, which is situated in the home of G. M. Geldert, M.D., anaesthetist to the Ottawa Civic Hospital, broadcasted a talk by Dr. O. K. Gibson, who is the chief announcer, and it is their intention to

broadcast a short talk on Dental Health each week during the winter. The committee in charge of this week's activities was as follows: Drs. W. C. Macartney, C. H. Juvet, R. H. Cosgrove, O. K. Gibson and S. G. McCaughey.

—S. G. McC.

* * *

ALBERTA.

 HE Calgary Dental Society held its first fall meeting in the Board of Trade Rooms on September 20th. Dr. V. H. Macauley presided, and the meeting had as guests the members of the Alberta Dental Board.

The out-of-town members were called on to speak, and the business which had been before the board at the day's special meeting was discussed briefly, and the prospects for the fall bird-hunting at considerable length.

Dr. J. M. Dixon was the principal speaker, and gave an excellent report on his observations at the Canadian Dental Association and International meetings. A review of the most interesting clinics was given, and the evening closed with "Mickey" Moore, of Medicine Hat, promising to send the Society a duck a member for a gorgeous (accent on the first syllable) duck dinner in the near future.

* * *

 HE visit of Dr. O. De Forest Davis, of Minneapolis, to Alberta, adds one more to the list of successful circuit clinics which have been held under the direction of the Board of Directors of the Alberta Association.

Dr. Davis gave clinics at Medicine Hat, Lethbridge, Edmonton and Calgary, and returns to his home leaving behind seeds of thought which mostly fell into good ground, and will no doubt yield "some sixty and some an hundredfold." Of the two hundred dentists in the Province, considerably over one hundred attended the classes, and all united in expressing pleasure at meeting Dr. Davis and at the work which he so ably presented. The loss is to those who did not take advantage of the excellent opportunity brought to their door.

The subjects of partial replacements and fixed bridge construction were discussed thoroughly, and a large number of valuable practical points were brought out. Stress was laid on the maintaining of the tissues of the mouth in the highest state of health possible, as the consideration of supreme importance in all replacement work.

Dr. Davis carries away with him many new friendships, the memories of a motor trip to the mountains, and also a silver tray, as a token of the appreciation of those whom he has benefited.

—J. W. C.

Oral Health

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No. 10

EDITORIAL

The Newer Standards in Dental Education

 HE Report of the Carnegie Foundation on Dental Education is to be published this autumn, and will be a most comprehensive volume comprising over five hundred pages and covering every phase of the subject, including the problems of preliminary education, pre-professional and professional training, licensure, and the practice of dentistry as a Health Service. This survey by Dr. Gies, being not only historical but including conditions now prevailing in all of the Dental Schools of the United States and the Dominion of Canada, will prove a most valuable work of reference.

Many dentists complain that in these more modern days the joy has been taken out of dental practice by the difficulties of diagnosis and the uncertainties of treatment. Other practitioners are disgusted with the persistent nihilistic attitude of laymen, who are advised by local physicians that the only safe treatment for dental disease is the ex-

action of the teeth, failing entirely to appreciate that a health service may be rendered by the elimination of infection through dental treatment and the saving of the teeth. Undoubtedly dentistry has been passing through difficult days of uncertainty and doubt, but these are surely evidence of progress, and the profession is emerging to fill a greater place in the health activities of the community than has been the case in the past.

In general terms it might be said that these evolutionary changes in the practice of dentistry have been concerned with the changed viewpoint of the profession from a mechanical to a biological one, and the resulting need in modern practice of the dental physician as well as the dental surgeon. The upward path of progress is usually zig-zag. There is no royal road, and the rough spots have to be covered as well as the smooth. But higher ground is being occupied, and dental service will be recognized more and more as an integral part of public health service.

This changed viewpoint of the practising dentist, which has so disturbed conditions of practice, has had its counterpart in the schools of Dentistry. The uniformity of the past has been superseded by each school endeavouring in its own way to meet the present-day need as local conditions might suggest. The requirements of the individual Licensing Boards have also been changed, resulting in undergraduate and graduate standards the country over being less uniform to-day than has been the case for a generation.

Licensing Boards, realizing that a dental health service is something more than merely an ability to perform with dexterity certain operative and prosthetic restorations, and that in the final analysis the test of fitness to practise dentistry is biological rather than mechanical, are varying their examinations accordingly.

The recognition of the biological and functional viewpoint is occasioning a reconstruction of the dental curriculum and a reconsideration of the preliminary requirements for entrance to Dentistry. If the contentions be true that the teeth are part of the body and subject to physiological and pathological laws, that disease in the teeth affects other parts, and that systemic conditions are reflected in the teeth and oral cavity, is there any valid reason why the standards of education in Dentistry should be lower than those of Medicine? Surely the time has come when the Dental Board of every province in Canada should demand of candidates for entrance to the Profession of Dentistry the same standard as that required for entrance to the Profession of Medicine.

Elsewhere in this issue appears an article on the subject of curriculum building in the modern dental college, which we hope may be read by

the Profession generally, that there may be a better appreciation of the tremendous problems now facing the schools of Dentistry, and whose proper solution will vitally affect the Profession as a whole.

Report of Ontario Dental Health Day Activities



ORAL HEALTH will publish in the next issue a complete account of the activities of the various districts and municipalities of Ontario in connection with Dental Health Day.

Doctors Arthur W. Ellis, Chairman, Ontario Oral Hygiene Committee, and Robert J. Reade, Secretary, Canadian Dental Hygiene Council, have kindly consented to jointly edit this material and will be glad to receive reports from every part of the Province, that the published statement may be as complete as possible.

Will all those who had some part in this great demonstration of the value of oral hygiene kindly forward particulars at once to Dr. Reade, King Edward Hotel, Toronto.

Dental Graduate Wanted For Service in Toronto General Hospital



WRITTEN applications will be received for position as graduate on the Dental Service in the Toronto General Hospital. Hours; Mornings, nine to twelve, five days a week (Monday to Friday inclusive), for eleven months in the year. Adequate salary will be paid. Applications by letter only, giving qualifications and experience, to: Department D, Superintendent, Toronto General Hospital.

Officers of British Columbia Dental Association

At the last meeting of the British Columbia Dental Association, Dr. W. N. Gunning, of Victoria, B.C., was elected President. Dr. E. Fraser Allen, Vancouver, B.C., was elected Secretary.

OFFICERS OF VANCOUVER DENTAL SOCIETY.

The officers of the Vancouver Dental Society for the year are: President, Dr. R. L. Pallen, Vancouver, B.C.; Secretary-Treasurer, Dr. H. M. Cline, Vancouver, B.C.

LOGIC makes only one demand, that of conscience. But life makes a thousand. The body wants health; the imagination cries out for beauty; and the heart for love. Pride asks for consideration; the soul yearns for peace; the conscience for holiness; our whole being is athirst for happiness and for perfection.

—*Amiel.*



THE HONOURABLE DOCTOR FORBES GODFREY,
Minister of Health, Province of Ontario.

Dr. Godfrey inaugurated the Dental Service in the Ontario Department of Health, and has always supported it wholeheartedly. He also gave every assistance to the Director of Dental Services in organizing the activities of the Ontario Dental Health Day.

ORAL HEALTH

A JOURNAL THAT STANDS FOR THE OUNCE OF
PREVENTION AS WELL AS THE POUND OF CURE



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No. 11

Report of the Ontario Dental Health Day, Wednesday, October 20th, 1926

DR. R. J. READE,

Secretary, Canadian Dental Hygiene Council.



THE first Ontario Dental Health Day, which has now passed into history, was an inspiring success. It was inaugurated under the auspices of the Ontario Department of Health. The Dental Profession and all those who so ably assisted in the various activities are to be congratulated upon the outstanding success of their efforts. It would be a labour of great difficulty to secure a list of the various efforts put forth in all the different sections of the Province. Nevertheless there should be an effort made to record as fully as possible the work accomplished, and also to show the means by which the result was secured. Hence this endeavour to make an historical record as complete and valuable as the circumstances permit.

The Dental Profession co-operated most cordially with the Provincial Government. How often we casually meet with our confreres, and then pass on without realizing qualities they possess, qualities which are only discovered when some great opportunity for service presents itself. Such is the thought that presents itself when one reads of the accomplishments of the dentists scattered throughout Ontario. It was a revelation to find how many dentists realized their duty to humanity and to their country, and were able and ready to assist in educating the public regarding the benefits to be derived from the Science of Dentistry.

The work accomplished was not confined to Dental Health Day, but extended over a long period of preparation. Dr. Fred. J. Conboy,

Director of Dental Services of the Ontario Department of Health, was responsible for both the inauguration and the organization of the movement, and he devoted his entire time for many months to this work, as an officer of the Department of Health. Dr. Conboy received the most sympathetic and generous support of the Honourable the Minister of Health, Dr. Forbes Godfrey, and the Deputy Minister, Dr. W. J. Bell. He was also ably assisted by Dr. A. W. Ellis, Chairman of the Oral Hygiene Committee of the Ontario Dental Association. In a like manner the dentists of the Province sensed the possibilities of the occasion, and the result is a monument to their vision in gauging its importance in building up a healthy and efficient population.

The important feature of the Ontario Dental Health Day is that it was not staged by the dentists of the Province. They did their share of the work, as did also all associations organized for the uplift of mankind. It was the Ontario Government that was primarily alive to the necessity of dental health for the citizens at large, and that undertook the propaganda for better dental health. More than this, the Ontario Government has incorporated Dentistry as an integral part of all official health activities in the Province. For this vision and their practical assistance the citizens of Ontario should highly commend them.

The Honourable Dr. Forbes Godfrey expressed his appreciation and that of the Government toward the movement in the following letters, which were issued to the Press and to the members of the Dental Profession:

To the Press.

It is gratifying to me to note the splendid reception that has been accorded our big campaign for the promotion of oral hygiene. From the Ottawa Valley to the Manitoba border, every city, town and hamlet, is contributing its quota to make the Ontario Dental Health Day a memorable event in the public health history of Ontario, and the dentists of the Province are to be congratulated on the energy and enthusiasm they are putting forth in the public health effort.

As a medical practitioner I have too often seen the most promising physique completely wrecked by disease processes in the mouth, associated with the teeth, and, as the member of the Executive Council, especially interested in public health, I highly appreciate the opportunity afforded the citizens of the Province to acquire an intelligent conception of the importance of a healthy mouth and healthy teeth.

Through the press, I desire to express to the Dental Profession of Ontario my personal thanks for their co-operation with my Department in this effort, and my admiration of this latest evidence that the Profession is interested individually and collectively in the promotion of the public health and public welfare.

FORBES GODFREY,
Minister of Health.

To the Dental Profession.

Now that the smoke of battle associated with the Ontario Dental Health Day has blown away, and the horizon is once more clear, I wish to express, through you, to your Association, my great appreciation of the activity of the organized Dental Profession of Ontario for putting over this splendid piece of propaganda for the promotion of oral health, and I further wish to say to you and to your fellow-practitioners that, as Minister of Health in this splendid Province, I express to you and to your Profession the very high appreciation of this Province for the noble manner in which the dentists of Ontario are coming forward and lining up to discharge the responsibility devolving on them as good citizens of the Province, in the field of public health and preventive medicine.

FORBES GODFREY,
Minister of Health.

The following statement from Dr. Conboy, Director of Dental Services of the Ontario Department of Health, will give some idea of the organization required. It will also show the widespread co-operation of the different organizations of the Province. These organizations would not have given their support unless they had thoroughly realized the importance of the movement in regard to the needs of the people.

REPORT OF THE DIRECTOR OF DENTAL SERVICES.

The Ontario Dental Health Day was organized by The Ontario Department of Health for the purpose of bringing to the attention of the people the harmful results caused by diseased mouth conditions, and informing the public, so they may be in a position to assist in connection with the prevention of dental diseases.

The Department found the various health, educational and social welfare organizations quite willing to assist, and the following agencies lent their active co-operation:—

- The Ontario Medical Association.
- The Ontario Dental Association.
- The Canadian Dental Hygiene Council.
- The Registered Nurses' Association of Ontario.
- The Red Cross Society (Ontario).
- The School Health Section of the Ontario Educational Association.
- The Imperial Order Daughters of the Empire.
- The Ontario Social Hygiene Council.
- The Ontario Retail Druggists' Association.
- The Home and School Clubs.
- The Women's Institutes.
- The Service Clubs.
- The Toronto Film Board.
- The Radio Stations.
- The Ontario Retail Merchants' Association.
- The Dental Dealers.
- The Manufacturers of Mouth Health Products.
- The Churches.
- The Young Men's Christian Association.
- The Young Women's Christian Association.



DOCTOR F. J. CONBOY, *Director of Dental Services.*

We also enjoyed the support of the majority of the newspapers and a number of magazines.

The activities arranged included:—

(1) **Motion Pictures in Theatres and Town Halls.**

The Ontario Motion Picture Bureau provided two hundred and twenty-five prints of a special Ontario Dental Health Film. The scenes for the picture were prepared and staged by The Toronto Department of Health, and the prints were distributed by the various exchanges

through The Ontario Motion Picture Distributors. By this arrangement the necessity of providing heavy metal boxes (as required) for shipping these films was obviated. They were sent by the exchanges to the theatres as part of the weekly consignment.

The Ontario Motion Picture Bureau also provided five regular length standard and six Pathescope size films. These, with a number of standard and Pathescope pictures in the possession of the Department of Health, enabled us to supply programmes for matinees and public meetings. All the large theatres in the Province showed the special film.

(2) Radio Messages.

A radio message was broadcasted from each Radio Station in Ontario and from four in the United States. In Toronto, the people who listened in, heard talks on Dental Health on five consecutive nights, three messages were sent out from Hamilton, and a number from Ottawa. London, Brantford, Preston, Prescott, were other centres from which messages were sent, also Bowmanville.

(3) Public Addresses.

Special speakers were provided for Service Clubs, Women's Institutes, Home and School Clubs, Church organizations, and other groups. Talks were given in shops and factories and public meetings held.

(4) Work in Schools.

Each teacher in the public and separate schools gave a mouth hygiene lesson. Special booklets (Dental Guide) containing modern material on the subject were given to the teachers. Essay and art competitions were held and prizes given. The High School students were addressed by dentists. The public school inspectors co-operated in a most enthusiastic manner, and members of the Profession addressed the Teachers' Institutes, which met a few weeks before the Health Day in order to inspire the teachers to give their best co-operation to the campaign.

(5) The Dental Play, "A Bad Baby Molar".

Forty-five sets of scenery for this play were sent out to different parts of the Province. The set consisted of a copy of the play, a large picture of the face, the patterns for the teeth, instructions for the preparations of the scenery and a photograph. The large paintings of the face were painted by a local artist. The paper was then cut into sections and the whole enclosed in a suitable folder. The play was presented at mass meetings of school children held in the afternoon and to parents' meetings in the evening.

(6) Free Dental Examination and Advice.

The dentists of the Province supplied free dental examination and advice, including instruction in mouth hygiene to all who requested this service on Health Day. In the larger centres special clinics were organized, while in the smaller places the dentists received the people in their own offices. Besides giving this service the members of the Profession made a dental survey of forty thousand children. Free x-ray pictures were taken for the patients in the larger clinics.

(7) Co-operating Agencies.

One of the most encouraging features of the Ontario Dental Health Day campaign was the spirit of co-operation on the part of lay organizations. The Insurance Companies prepared and distributed interesting and instructive dental health folders to their policyholders. One company sent out one hundred thousand of these booklets. Letters requesting the local branches of the various organizations to have a part in the effort in each municipality were sent out by the provincial officers of the Service Clubs, Imperial Order Daughters of the Empire, Women's Institutes, Home and School Clubs, and others. The United Church of Canada sent a communication and booklet to each minister in Ontario, and the Presbyterian Church rendered valuable assistance. The local committees found it easy to get the assistance of the local branches when they had received such a communication from their own executive officers.

(8) General Publicity.

The general publicity was provided by posters, automobile stickers, newspaper advertisements placed by manufacturers and distributors of pure food articles and mouth toilet preparations, dental health articles in the press, attractive window displays and slogans on sign boards. The only difficulty experienced in connection with the whole campaign was to get the support of some of the newspapers. They felt that they should be paid for publicity of this kind. Nevertheless newspaper articles, prepared by the Department, appeared in the vast majority of the papers.

(9) Government Departments and Officials.

The Ontario Department of Health had the support and assistance of the other branches of service in arranging for this undertaking. The Department of Agriculture, through the Women's Institute branch and district representatives, the Department of Education, through the public and separate school inspectors, and the Teachers' Institutes, and then the other divisions of the Health Department. The plan was worked out so that a new body of workers would be put at the task at different times as the undertaking progressed, the dentists, physicians, nurses, social welfare workers, school teachers and Medical Officers of Health being brought in in turn, and thus a helpful interest was maintained throughout the entire campaign.

(10) Preliminary Arrangement.

From the standpoint of real dental health education we are convinced that the work done in organizing the effort is just as valuable as the Health Day activities. The thousands of letters sent to the leaders in the various walks of life, the addresses given at conventions, and all the work done to secure support, must do much to promote better dental health, and even the dentists who were called upon to give public addresses will profit by the study they gave to the subject of Mouth Hygiene. Fifty-five sets of slides and twenty sets of charts were sent to members of the Profession to assist them in presenting the subject of Dental Health to the people.

All the activities arranged for the Ontario Dental Health Day were of an ethical nature. We made no effort to stage a big show,

ut carried through the arrangements in a quiet, dignified way. At the same time we organized the work so that our dental health message would be presented to all classes of our citizens. The Department is glad to know that in this Province-wide effort they enjoyed and still have the confidence and support of the professions and organizations interested in the health and education of the people.

FRED J. CONBOY,

Director of Dental Services, Ontario Department of Health.

The following report was issued by the Chairman of the Oral Hygiene Committee of the Ontario Dental Association:

REPORT OF CHAIRMAN, ORAL HYGIENE COMMITTEE.

As Chairman of the Oral Hygiene Committee of the Ontario Dental Association, I wish to express appreciation and thanks to the members of the committee and the Dental Profession of Ontario, for their wonderful and loyal support in the great undertaking of public dental health service.



DOCTOR A. W. ELLIS, *Chairman Oral Hygiene Committee.*

When the work of this committee was started, some eighteen years ago, the main object was to educate the people, in some small way, in the prevention of dental disease and care of the teeth. At that time dental disease was without significance, except as to local

distress. Modern research and clinical evidence have now shown that dental disease and general health are closely associated, so much so that the Ontario Department of Health considers that dental disease is a serious epidemic, affecting the health and well-being of the people. Effective means must be adopted to combat this epidemic. A dental branch was established, with a director in charge, for this purpose. The profession was consulted through the Oral Hygiene Committee. They went to the profession for assistance, and, as a result, a vigorous campaign was inaugurated. Ontario Dental Health Day was the climax. At all times there has been the closest co-operation between the Department of Health and the profession. Nothing has been undertaken without the consent and endorsement of the profession.

Dentistry is no longer the repairing of defects for those who desire it, but has become a health service. Citizens of all ages must be educated as to the menace of this disease. Opportunity for dental service must be given to all. Dentists all over the Province have risen to the occasion and have proven themselves as belonging to a great and noble profession.

The general public are practically whole-hearted behind this new health service. Some there are who are opposed to vaccination, some to the use of anti-toxins and serums, some to the pasteurization of milk, some to the chlorination of water, and some to many other health activities; but few, if any, have protested at the measures used in the combating of dental disease.

The programme of the Ontario Department of Health in the lessening of dental disease is to be extended. The profession will be asked to co-operate and help in this work. I feel sure that they will in the future, as they have in the past, prove themselves altruistic and self-sacrificing.

Public dental health service is the new arm of Dentistry. Let us use it wisely and strongly, for the benefit of humanity.

Too much cannot be said in praise of the Minister of Health. Hon. Forbes Godfrey; the Deputy Minister, Dr. W. J. Bell; the Director of Dental Services, Dr. F. J. Conboy, and many others of the staff of the Department for their interest and courage in developing this new branch of health service.

ARTHUR W. ELLIS,

Chairman, Oral Hygiene Committee, Ontario Dental Association.

There is such a mass of reports on hand that it is impossible to publish more than extracts, which, when summarized, give some idea of the general campaign and the results obtained through the Ontario Dental Health Day activity.

FIELD REPORTS FROM VARIOUS DISTRICTS.

London.—“We looked after seventeen towns and villages, in addition to the city of London. The largest number handled by one operator was two hundred and forty, and the smallest number twenty-four. There was a larger attendance at the country clinics than in the city, due no doubt to the fact that many farmers took advantage of the unfavourable weather, which did not allow them to work.”

The following are copies of cards issued to the public in the London District:

ONTARIO DENTAL HEALTH DAY

Wednesday, October 20th, 1926

In order to impress upon the people of the Province the importance of dental defects in relation to general health, the Ontario Department of Health have announced that

Wednesday, Oct. 20th next,
will be

ONTARIO DENTAL HEALTH DAY.

There will be a large number of Dental Clinics in operation throughout the Province, at which any person may obtain free examination, consultation and advice. A list of these Clinics for the County of Middlesex is given on the back of this card.

You are urgently asked to avail yourself of this service in the interest of your good health and visit the Clinic most convenient to you. There will be an experienced and qualified examiner in attendance from 9.00 a.m. until 5.00 p.m. Don't overlook this opportunity. It is in the interests of the men, women and children of the Province.

These Clinics are being operated by the Ontario Department of Health, and the Dentists are simply lending their assistance upon request.

(Over)

Free Provincial Dental Health Clinics will be Situated at the Fol- lowing Centres

Ailsa Craig — Dr. Kennedy's Office.

Belmont—Dr. Waring's Office.

Delaware—Town Hall.

Dorchester—Dr. Waring's Office in Mrs. W. Lane's residence.

Glencoe—Dr. Mumford's Office.

Granton — Dr. Clark's Office, Oddfellows' Block.

Ilderton—King Edward Hotel.

Lambeth—Longwoods Inn.

London—The Hydro Shop.

Aberdeen School.

Lorne Ave. School.

Riverview School.

St. Michael's School.

Trafalgar School.

Lucan—Dr. Clark's Office.

Melbourne—Dr. Johnson's Office.

Mt. Brydges—Dr. Gillie's Office.

Newbury—Dr. Bayne's Office,

at the Hotel.

Parkhill—Dr. Freele's Office.

Strathroy—Dr. Corrigan's Office.

Dr. Willmott's Office.

Thorndale—Town Fire Hall.

Wardsville—Dr. Steele's Office.

PLEASE VISIT THE CLINIC

MOST CONVENIENT TO YOU.

(Over)

Dufferin County.—The Public School Inspector reports: "We had a big day on October 20th. Each dentist in the County gave four addresses. The rural schools assembled at suitable centres. The mouths of the children were examined and notification cards sent home.

"One dentist in this County sent in the following report of his activities: 'On Health Day I visited four schools in the north end of the County, spoke to about one hundred and fifty children, and examined about one hundred.'"

Beamsville.—From the School Nurse: "I wish to thank you for all the helps in holding Dental Day in this town. One mass meeting, with addresses by the local dentists and "Bad Baby Molar," was a success. A few of the pupils have written essays on Dental Day, which I am sending to you."

Northern Ontario.—The District Officer of Health reported that the dental health educational campaign extended to all parts of his district, and submitted a number of newspaper clippings describing the activities. The reports from Timmins and Kapuskasing are characteristic of the work done throughout.

Timmins.—"The enclosed clippings from the 'Porcupine Advance' (before and after October 20th) speak for themselves. The patients examined were mostly children. A surprisingly large number of children were found to have permanent molars in bad condition less than 10 per cent. of those I examined personally were found to be immune. The dentists seemed to enjoy the day at the clinic, and I think Dental Health Day could be held annually in Timmins with advantages to both patient and dentist."

Kapuskasing.—"The Ontario Dental Health Day here turned out a considerable success. This success was due to the manager of the Spruce Falls Pulp and Paper Company here and the Safety Department in connection with the company. Mr. Noble, the manager, was quite sold on the idea of teeth being a probable cause of an accident, and so were the Safety Committee, so they gave us their support in every possible way and allowed us the use of the Company Club House (there is no town hall here yet), which is never permitted any outside interest to use or let. The house was packed to the doors, and people standing.

"I have never addressed an audience in my life before, but never saw any audience so attentive.

"I was granted the privilege of examining the men of the plant and the assay for 168 men was: Cavities, 591; abscesses, 75; pyorrhoea, 56; plates, 20; impactions, 5; necessary immediate extractions, 74; perfect teeth, 9."

Wallaceburg.—"The Dental Health Day went off like a million dollars. The films were shown at the Temple Theatre for three days. Tuesday afternoon the theatre manager very kindly placed at our disposal the Temple Theatre, and we had between eight and nine hundred school children there. There was an address on 'Teeth and Their Care.'

"The playlet, 'The Bad Baby Molar,' was very well played indeed. The programme lasted from 2.30 to 4.00. Now I am arranging for the Separate School Board to give two prizes, but haven't put it across yet. The prizes have been promised, and will be given even if the local dentists have to provide them. The four prizes from the Public School Board have been agreed upon.

"We could not have got along without our nurse, Mrs. Bagshaw. She was very enthusiastic, and smoothed out many little difficult details.

"To-morrow (Tuesday) the children in the third and fourth book classes write the essay. The local dentists will examine and award the prizes. Each pupil will have a number, so that the examiner will not know whose paper they are reading."

Penetanguishene.—"In reply to yours of the 22nd inst., lantern slides arrived in plenty of time. I showed them, and gave talk at High School, Protestant and Separate School, this week; also gave chart talk to Kiwanis Club, Midland. Examined large number

f children on Wednesday, and found conditions very deplorable among the poor Catholic population here."

Ottawa.—A very aggressive dental health educational campaign was carried through at Ottawa. The activities consisted of talks to Service Clubs, special dental health films at the theatres, radio messages, newspaper articles and window displays. The campaign finished up with a special programme given to an overflow house at the Centre Theatre. The druggists entered the window display competition, for which prizes were offered. There were some excellent and original window displays, and first prize was awarded to A. F. Astley, 244 Laurier Avenue E.; second, Ahern's Drug Store, 713 Somerset; third, Hosterman, the druggist, 781 Bank Street.

Ganton.—The following is a letter from Ruth Mackenzie, principal of school, to the Director of Dental Services. It shows that others were working. "We received the scenery for the play, 'The Bad Baby Molar,' and are indeed grateful to you for your help and interest you have shown in sending us so promptly the above mentioned. It is a very fine play, and turned out a success, due to your assistance."

Brockville.—"The following is the programme carried out by local dentists in connection with Dental Health Day:

"1. A survey and examination of all children in the Public Schools—1,200 in all. This was done the week before, and notification forms of defects were sent to parents by the School Nurse, Miss E. J. Nicholson. I may say that this is an annual effort on behalf of local dentists.

"2. On October 20th, in the morning, a talk on Mouth Hygiene was given in each school.

"3. On October 20th, in the afternoon, the local dentists, co-operating with the Public School Inspector, went out to selected rural schools, where the pupils were examined and suitable lectures delivered. In all cases the pupils provided appropriate exercises. (Dr. Conboy has a report of my effort at Toledo, where we examined 112 children, and had as many more parents in attendance. I expect to go out to North Augusta on a similar mission next Wednesday, and to the Mallorytown School the following week.)

"4. I had the pleasure of addressing the Leeds Teachers' Institute on October 9th, on 'The Four R's of Dental Hygiene.'"

Dundas.—The Director of Dental Services and local dentists gave addresses on Mouth Health at meetings of the Teachers' and Women's institutes. A clinic, with free examination, advice and instruction in mouth care was held at the Public Library, and public meetings for children and parents held in the theatre were well attended. The play, "The Bad Baby Molar," was played at each show. Compositions on mouth care were written in Public and Separate Schools. Splendid compositions resulted, and prizes were given. The press gave excellent support, and the town certainly was convinced that there was an Ontario Dental Health Day.

Kingsville.—"We made arrangements with the Principal of the Public School and Dr. Jenner, our Medical Health Officer, and gave a talk to the children. We arranged to have as many as possible in the room; then we divided up our subject matter, so that we would not be overlapping, and gave our talk twice, so that we were able to talk to all the children who were old enough to follow the talks.

"The children of the higher schools are to write essays as part of their school work on Dental Hygiene. These essays will be written in school, to ensure that the children do not have any outside help, and are to be in by the first of November. We are awarding prizes to the three best essays.

"On Wednesday the children were given a free matinee at the local theatre, where we put on the dental play, with a good comedy following. The dental picture was also shown twice at the evening performance of the theatre.

"We arranged with our local newspaper to print one of the newspaper articles each week which we received from you.

"We found the greatest readiness possible in the way that the school teachers and theatre owner co-operated with us.

"I think that this covers our work fairly well to date. We are hoping, as soon as we can get a good picture, to put on a real health programme here in conjunction with the medical men. Mr. Maxwell, the theatre owner, has offered to give a free matinee to everyone, provided that we can get a suitable film."

Forest.—"Two dozen window posters were received and given much prominence by the merchants of the town. Both newspapers gladly carried a good advance notice of the contemplated activities of the day, and then published articles on the 20th, same being received from your Department. Under the active co-operation of the local Medical Health Officer, Dr. J. Rogers, we examined the teeth of the Public School pupils, numbering 170 in all. Each pupil examined was presented with a sample box of tooth paste, and each girl examined was presented with a bottle of mouth wash in addition. The pupils were individually impressed with the idea of prevention, and this will be followed up by the teachers in their hygiene hours.

"We made arrangements for a picture show hour on the 20th for the pupils of the Public Schools, the managers of the Kineto Theatre having kindly consented to assist us."

East Kent.—The following letter is from Mr. W. H. G. Colles, Inspector of Public Schools. Mr. Colles has 57 teachers, and each one will inaugurate a service of inspection, education and supervision. "As requested, I read your letter and announcement to the East Kent teachers on convention, every teacher being present, and I could only leave your valuable suggestion for each to work out in his or her own way, according to existing conditions. I further took upon me to appoint, besides, November 15th as a special occasion on which each teacher is to give a special talk and demonstration on oral hygiene in his or her own school, and establish a systematic course of oral practice, and arouse a special interest in this important subject."

Port Perry.—The following is a report from the Medical Officer of Health, Port Perry: "I am Medical Officer of Health for the village of Port Perry, and for the townships of Reach and Scugog, all in the County of Ontario.

"Through the Principals of the High and Public Schools of Port Perry, I advised the pupils and teachers of these schools regarding our programme for that day. I visited all the schools, with two exceptions, in the townships of Reach and Scugog, and advised the teachers and pupils of these schools of the purpose of Ontario Health Dental Day, and invited them, one and all, to come to Port Perry and receive,

free of any remuneration, what we had to offer. The day came, and our three local dentists were very busy throughout the entire forenoon making examinations of the mouths and teeth of all who presented themselves; in all some two hundred and fifty examinations were made.

"In the afternoon we repaired to our spacious Town Hall, which was filled to overflowing, mostly with children, although many adults were also present. Two of our local dentists addressed us on the care of the teeth and mouth, advising the use of proper food and urging prevention rather than cure.

"Our Mr. Scott, of the movies, showed us the Ontario Government film, and on the ground that 'All work and no play makes Jack a dull boy,' Mr. Scott added another comedy film. Some of the pupils also entertained us with recitations, songs and dancing. All agreed that they had received education as well as entertainment."

Port Hope.—"Oct. 7th.—In the afternoon Dr. F. J. Conboy, of Toronto, gave a lecture on care of teeth, etc., accompanied by lantern slides and motion pictures, to the Public School pupils and teachers. In the evening Dr. Conboy spoke to the members of the Rotary Club, Public School Board and dentists of Port Hope, on the necessity for looking after the children's teeth.

"Posters, advertising Oct. 20th, 'Dental Day,' were exhibited in the store windows of the town, and were posted up in prominent places throughout the surrounding country, including the villages of Welcome and Dale. Car stickers were pasted on a great many windshields of cars in the town; also an insertion for three days was put in both the daily papers printed in Port Hope, advertising this day.

"Oct. 18th.—In the morning the dentists examined the teeth of the pupils of the two primary schools.

"Oct. 19th.—The teeth of the pupils of the Central were examined. Each pupil was given the card, the dentist retaining the duplicate. In all approximately six hundred and sixty-five boys and girls had their teeth examined.

"Oct. 20th.—The whole day was set aside by all the dentists of the town for the purpose of giving free examination and advice to any wishing to avail themselves of this opportunity."

Ingersoll.—"Dr. Harry Thomson, of Toronto, addressed the Collegiate and Memorial Schools on Thursday previous to Dental Health Day. I gave the junior children in the Ward School an address on Dental Health Day. The local health nurse had the posters placed in the store windows, schools and offices of the town."

Oshawa.—Report from Oshawa:

"1. The Oshawa dentists held three meetings to prepare ways and means, and ten of our dentists took active part.

"2. The drug stores gave us a window display that day.

"3. We placed in all schools and factories some hundred posters."

Cayuga.—"I appeared before the pupils of the Public School and the two lower rooms of the High School, who were all assembled in the Town Hall. I spoke to them for a few minutes, using as an introduction one of the fairy stories—'The Key Flower'—given in the pamphlet I got at one of our conventions a couple of years ago from the Department of Health Education, American Dental Association,

Chicago. I find that very good, and have given copies to the primary teachers to use in the school.

"With the co-operation of the District Representative of the Department of Agriculture, we put on the films, 'A Fair Day' and 'Overcoming Life's Handicap,' along with some comic films he had procured from his Department. These films were shown again in the evening at School No. 8, before a large crowd of children and parents.

"The talk and films seemed to be well received, and students and teachers seemed very grateful for our efforts."

Fergus.—The local dentist made a dental survey of the school children.

Orillia.—Addresses on Mouth Health were given before the local Service Clubs, and to a large mass meeting of children in the Community Theatre. A free clinic for examination, advice and instruction in mouth care was held on the Health Day.

St. Thomas.—"Re. Dental Health Day. Distributed the pamphlets and posters to the schools and churches. Addressed two of the schools, with lantern slides, in the afternoon, and a large gathering of about seven hundred of our people in the evening. Also one of our confreres from London addressed the evening meeting. Carried out the free examination services as set forth in the undertaking. The Health Day was heartily put across by many of the fellows, and through it we hope that a Public Dental Clinic in our new Technical School will be established."

Dundalk.—"Dr. F. Martin, M.D., M.O.H. for Dundalk, took the initiative in respect to Dental Health Day activities here, and called on the dentists. All were anxious to co-operate in the matter, so it was arranged that the dentists should draw up the programme, and Dr. Martin agreed to undertake the execution of the details, as a Health Board effort, with our assistance.

"A suitable advertisement was inserted in the local paper; bills, posters, literature and slides were procured from the Department of Health, and as much publicity as possible, including an editorial in the local paper, was obtained.

"The Inspector of Public Schools for the district was interviewed, and as a result he granted a half-holiday to local as well as adjacent township schools.

"In all 131 children and about 25 adults attended the clinic, which was held in the Town Hall. The children sang songs and gave recitations while the inspection was being conducted in an adjoining room.

"Following the inspection, a number of slides were thrown on the screen and explained.

"At the close of the meeting literature was placed in the hands of every child and adult present."

Newmarket.—The opinion of the dentists of Newmarket is expressed in the following words, addressed to the Department of Health: "We congratulate you, Sir, on the conception of this Dental Health Day, and also congratulate you on the grand success which was attained under your direction. We trust we may have more of such days."

THE
ONTARIO DENTAL HEALTH DAY
WEDNESDAY, OCTOBER 20th
Free Dental Examination and Advice



THE MOUTH is the GATEWAY to the BODY

KEEP IT HEALTHY

By

Regular examination and
proper treatment.

Balanced diet—more fruit, vegetables,
milk and whole-grain products.

Sufficient chewing of food.

Careful cleansing.

Plenty of sleep, and exercise in the
Open Air.

COPY OF LARGE DISPLAY CARD USED IN STORE WINDOWS.

Sault Ste. Marie.—“The pamphlets, ‘The Dental Guide,’ were sent to every teacher in the district, including Public Schools, Separate Schools, Collegiate Institute and Technical School, and, so far as I know, a talk was given in each of the rooms by the teachers. I also supplied each clergyman with a copy.

“The stickers were supplied to the Rotary Club and Kiwanis

Club. In all, the dentists of the city gave eighteen addresses to the schools, Rotary Club and Women's Institute.

"Two hundred and thirty-seven people availed themselves of the offer of the city dentists to give free examination and advice.

"Two of the theatres were supplied with films, which were very favourably commented upon by the public.

"As soon as the consent of the Board is obtained, a survey of the schools of the city will be made.

"From the above report you will see that Dental Health Day was quite a success in this district. I can see many places now where we might have made it more effective, but we will make amends for that next time."

Bowmanville.—The activities for the Health Day included a talk on the radio, addresses to the Teachers' Institute, the High School students, the Home and School Club, the Rotary Club. Posters and stickers were distributed, and window displays arranged. The local theatre showed the special film. The effort was a great success.

Blyth.—We made a dental survey of the school children.

Sutton West.—"We held a public meeting, which was the first of the kind that has ever been held here, but it proved quite successful. We had nearly three hundred children of the local and neighbouring schools present, and the youngsters were very attentive throughout the meeting."

Pembroke.—"Dental Health Day was quite successful here. The dentists addressed the children of the Public Schools. The teachers in the Separate Schools gave talks to their respective classes. All the dentists gave free examinations."

Hagersville.—"I am glad to be able to report a well-attended and very enthusiastic meeting on Wednesday afternoon, and your assistance in making it such is greatly appreciated."

Stratford.—"The Dental Health Day, as far as Stratford was concerned, was a decided success, surpassing even our fondest hopes. Six hundred people attended. We used the City Hall and had dental chairs moved there for the day.

"Many people drove in from the surrounding country, bringing their children with them. They seemed quite interested as we pointed out defects, and promised to have them looked into.

"On the Monday previous we drove to the schools in the neighbourhood (outside the city), and gave five-minute talks, explaining the purpose of the clinic and extending an invitation to their parents, etc. This, we think, did a great deal to bring it to the notice of the country people in the neighbourhood.

"The local paper published daily articles which we submitted, and the picture caused quite a lot of favourable comment.

"But the biggest success of all was the essay competition, over four hundred essays being submitted. The teachers in some schools made it compulsory to write them, using it as their monthly composition. We told the children that any of the dentists would be delighted to supply them with any material they might have. They took us too literally and fairly besieged the offices. However, the essays were excellent, and showed that the children are being taught oral hygiene by the teachers and school dentist. Enclosed are two of the essays, one a prize-winner; the other was not good enough to win

a prize, although there were five prizes given. That will give you a pretty good idea of the type of essays that were written."

PRIZE-WINNING ESSAY.

The Relation of the Teeth to the General Health.

The field of scientific research has positively demonstrated that the mouth is the gateway to good health, and a diseased condition of the teeth has far-reaching and widespread influences on the general health.

We will deal with this subject in two parts—first, showing the knowledge gained regarding the formation and development of the teeth; and second, with the effect of diseased teeth on the health.

It is of prime importance to have a set of teeth perfectly formed and properly developed. Hereditary influences may have a beneficial effect or otherwise, but a great deal may be gained by proper attention to diet, sanitation and dental care. The mother may exert a strong influence upon the child's teeth by careful attention to diet and general health during prenatal days, and similar care must be devoted to the growing child through the early years of its life.

Whatever promotes good health will aid in building up good teeth. Plenty of fresh air and sunshine, a proper amount of nutritious food, thoroughly masticated, ten hours' sleep and regular cleaning of the teeth are essential to good health and sound teeth.

The care of the temporary teeth is important, because they control the line and spacing of the permanent teeth which follow them. If the teeth are not properly spaced and in a well-formed arch, they will not mesh as perfectly as they should, resulting in impaired mastication, the forerunner of sour stomach, indigestion and dyspepsia.

Regular brushing and cleaning will, to a large extent, prevent the formation of tartar around the neck of the tooth, which separates the tooth from the gum, and allows the growth of disease germs. These are carried into the blood and distributed to all parts of the system. It is also contributory to the development of pyorrhea, which plays a great part in undermining a healthy body.

Cavities in the permanent teeth are prolific sources of disease bacteria, and consequent weakening of the physical system. Decayed teeth, that must be extracted, are also a factor in imperfect mastication, and so contribute their quota to the stream of poisons entering the blood.

Statistics show that over 80 per cent. of human ailments, and over 90 per cent. of children's diseases, are directly connected with the oral cavity. The poisons that flow from diseased teeth, and are carried through the system by the blood, will fasten upon any weak spot in our organism, and so undermine the health that disease is more easily contracted, because the poisoned blood is unable to repel the invasion of bacteria, as a healthy condition of the system would enable it to do.

We know that abscesses and infections occur in the mouth, and that the foci in the mouth are in the same relation to arthritis, nephritis, and throat troubles, as are infected tonsils. The results being general ill-health, sallow complexion, gastric and intestinal troubles, anæmias, tonsilitis, pharyngeal and glandular troubles of children, chronic rheumatism, and blood poisoning. (Information from family dentist.)

I have explained, in a small way, the effect of bad teeth on the

health, and, in conclusion, would strongly emphasize the necessity of eliminating primary infection, which is in the mouth in a large majority of cases. We must have a harmonious functioning of all parts of the body to be in perfect health, so people should not expect to be well with a diseased condition of the oral cavity, caused by neglected care of the teeth.

HELEN NORINE COSENS, Romeo School.

Halton and Wentworth.—From the Public School Inspector: "The Dental Health play was put on at Oakville and Milton. In both places the house was crowded, and there was a fine address by a dentist. I am arranging similar meetings for Acton and Georgetown."

Kenora.—"The school teachers had an address on Dental Health at their convention. Dentists spoke at meetings under the auspices of Service Clubs, Young People's Clubs and Kinsmen. The film was shown at the local theatre. Over four hundred people took advantage of the free clinic. The work had to be extended to the following Saturday, to accommodate the people."

Fort William and Port Arthur.—"A very effective dental health educational campaign was undertaken. An address was given to the teachers assembled in annual convention. Posters and stickers were distributed, and window displays arranged. The theatres showed the special film, and public addresses were given by the local dentists. The most beneficial activity was the dental survey of the school-children."

Kitchener.—A dental survey of the children in the Separate Schools, dental health education by newspaper articles, posters and talks to school children; and a big community meeting, where films, plays, and a talk by the Director of Dental Services for Ontario, comprised the programme, were the principal activities at Kitchener.

St. Catharines.—The Medical Officer of Health reported a fine dental health educational campaign, and expressed the opinion that a special dental day should be held each year.

Fort Frances.—"Well, Health Day is over, and went over very satisfactorily. We examined the teeth of all who applied, and were kept pretty busy at it. Had a free matinee for school children in the theatre, the town schools and neighbouring country schools being let out early to attend it. Theatre seats about 700, but we packed in over 900. We put on the slides and lectured them, ran two films—'Through Life's Windows' and the special dental film ('Through Life's Windows' being 1,000 feet), and put on the play, 'The Bad Baby Molar.'

"Everyone says the event was a great success and should do a lot of good. Is it the intention of your Department to make Dental Day an annual event?

"Although there was such a crowd of children—and they were packed in like sardines, even the aisles being full, with children sitting on the floor, three children in two seats, etc.—the attention was perfect, and every word of the lecture could be heard throughout the theatre.

"The children were well trained for the play, 'The Bad Baby Molar,' by the Sisters of St. Mary's Separate School, and the boys and girls enjoyed it greatly and, I think, would profit also. Matinee altogether lasted about an hour and fifteen minutes.

"Dental cream manufacturers distributed free samples of tooth paste to the children after the matinee, which also pleased them and might have the effect of getting some of them started to give their teeth more attention.

"The playlet, 'The Bad Baby Molar' and the two films were put on also at the two evening performances on Health Day to full houses of adults. The films were also run on Monday, Tuesday and this (Thursday) evening, to good houses (about 2,500 people, including children).

"Besides the activities on Dental Health Day above mentioned, we had a clinic room, with a couple of display cabinets (electrically lighted) showing x-ray pictures of many tooth conditions, several models showing diseased conditions, a number of charts, etc. We also distributed booklets."

Niagara Falls.—"We had with us on Dental Health Day a confrere from Toronto, who addressed five hundred children at four o'clock in the Webb Theatre, and a crowded assembly hall at the Niagara Falls Collegiate at eight o'clock, where the Home and School Club were putting on 'The Bad Baby Molar.' The Mayor presided, and the whole performance went over nicely. The dentists of the Niagara Falls Society held a dinner at six o'clock, immediately following which an address was given at No. 4 School, Stamford Township, to a body of children there.

"The dentists here examined altogether about one hundred children."

Brantford.—The dentists of Brantford spent a busy day examining adults in the city and children in the surrounding districts. A radio talk was sent from this centre, and addresses were given to Service Clubs and women's organizations. The effort was a great success.

Sarnia.—"All of the third and fourth book Public School pupils were given a talk on the care of the teeth, and a prize offered to the pupil sending in the best essay on the material given. The prize has not yet been awarded, but we have a large number of good essays.

"On the evening of October 20th an appropriate dental talk was given over WAFD radio station, located at Port Huron, Mich.

"Posters were distributed and placed at the gates of the larger industrial plants and in a number of store windows. Automobile stickers were placed on windshields of cars. Several merchants carried a few lines in their ads. drawing attention to Dental Health Day.

"At our recently installed school clinic at the Technical School we made preparation to have a very educational and helpful programme.

"We had a diet table, on which were set painted articles of diet, cut out of cardboard, and explaining the benefit of each. We had the walls hung with charts and photographs of all kinds, to help explain in a clear manner many of the things we knew we would be asked about.

"We had an excellent orthodontia display of models and photographs, numerous x-ray films to show different disease conditions, prepared sections loaned by the supply houses, showing normal structure and disease structure, eruption charts, and several hundred dollars' worth of the best type of prosthetic restorations on models.

"We had the regular dental chair and two portable chairs right at hand. The clinic ran from 9.00 until 12.00, and from 1.00 until 6.00, and we had at least one medical doctor from the city present at all times to discuss each case with the dentist.

"In the evening we had a public assembly in the Technical School auditorium, and presented a programme as follows:

"Orchestra selections, 15-piece orchestra.

"Lantern slide talk; dental slides.

"Talk by Dr. Bell, Deputy Minister of Health.

"Play, 'The Bad Baby Molar.'

"Selections by String Trio.

"Movies, 'Overcoming Life's Handicap.'

"God Save the King."

Hamilton.—Dental Health Day in Hamilton was an even greater success than was anticipated. Hundreds of people availed themselves of the opportunity to get free examination and advice, and the clinics were so crowded that they had to remain open an hour later than was intended.

The x-ray examinations at the health centre continued until after six o'clock at night, although it was originally intended to close down at five o'clock. When the latter time arrived, however, there were still a number of people waiting, and it was agreed to carry on for another hour, although the dentists and their assistants were fatigued after the day's heavy work.

One of the important benefits that Dental Health Day will create arose incidentally. From the examinations at the clinic and the reports from the dentists it has been observed that there are a large number of people with teeth which are out of alignment. It has been proposed that one of the clinic doctors be given a post-graduate course in the treatment of this class of dental trouble, and the matter will be brought before the Board of Health in due course.

Reports from the schools show that the efforts made by films, plays, talks and lectures to bring the importance of dental hygiene before the children, who can best profit by it, have been very successful. Board of Education officials this morning expressed themselves as highly gratified with the success of the drive in the schools.

This is probably the first time in history that such services as were rendered by the dentists have been part of a health drive, and officials are confident that Hamilton made a good showing yesterday as compared with other municipalities in the Province.

The dentists gave two prizes for essays in the senior and junior fourth grades in each Public School which amounted to seventy-five dollars.

The after-effects of oral hygiene day were apparent at the next meeting of the Board of Education, when the board room was hung with scores of posters drawn by the children from the senior third and the junior fourth grades of the Public Schools, each with its appeal for kiddies to keep their teeth clean.

The doctor mentioned that while a prize had been awarded for essays on dental health, there had been no prizes donated for the many excellent posters. The Board of Education set aside \$15 for poster prize money.

Collingwood.—Pamphlets were distributed in all the Public

Schools to the pupils. The teachers were also asked to give a talk to their classes based on pamphlets supplied.

Both movies showed the Dental Health Day film. Posters were put up in the post-office and other business places. The newspapers had an article printed. The dentists all gave free examination and free advice.

Toronto.—The activities in the Toronto schools were carried out under the direction of the Department of Public Health and with the approval of the Board of Education and the Separate School Board, both of whom issued instructions to their teachers to give a short talk in their classrooms on Mouth Hygiene.

The Oral Hygiene Committee of the Ontario Dental Association supplied 3,500 copies of the "Dental Guide" to be used by the teachers as an outline for their talk, and this booklet was approved by Dr. Hastings.

The dental clinics in the schools reserved the whole day for pre-school children, in order that advice could be given to mothers on the necessity for early care and treatment where necessary. Mothers' meetings were held in three schools in the morning by the survey staff, which were well attended. The staff are not usually on duty in the afternoons, but on this day they all remained at their post in the afternoon, in order to make a personal contribution to the success of the movement. Some members of the staff visited Cobourg, Todmorden, Forest Hill and Humber Bay, to talk to large groups of school children, and the others kept their clinics open.

The public health nurses heartily supported the plan. They placed posters in every city school, and assisted greatly by making appointments for the pre-school clinics and also for adults to attend the free clinics at the Dental College and Toronto Western Hospital.

Other activities in the City which were directly arranged by the Provincial Department of Health might also be mentioned.

The University of Toronto offered the facilities of the Dental College Infirmary for a free clinic and ninety-five Toronto dentists volunteered their services. A large number of people took advantage of this free service to secure advice as to mouth conditions and examination including x-rays where necessary.

The Dental Department of the Toronto Western Hospital followed the same plan, all of their regular staff being on duty for the day. This clinic was also very well attended.

The special Dental Health Day film was shown in about thirty Toronto theatres.

Radio talks were given throughout the week over five broadcasting stations.

A public meeting was held in the evening at Hygeia Hall under the auspices of the Women's Social Hygiene Club. An address illustrated by lantern slides and film was given by the Director of Dental Services, Toronto Department of Health.

The following is a report on Dental Health Day activities as carried out by the Oral Hygiene Committee of the Academy of Dentistry in the City of Toronto:

Date—October 20th, 1926.

At 9 o'clock on the morning of October 20th, fifteen-minute addresses were given in all the Technical and Collegiate Schools.

Arrangements were made and speakers provided for thirty-

minute addresses to the following service clubs, on or nearly approaching October 20th:—Rotary, Lions, Gyro, Progress, Young Men's Canadian Club and Young Men's Board of Trade, Young Men's Kiwanis Club.

Arrangements made and speakers provided to address industrial organizations on request.

Arranged addresses to Social Welfare Clubs, Home and School Clubs and church organizations.

During the week addresses were given at the Central Y.M.C.A. to various groups of boys and young men.

Dental Health Day literature was supplied and placed in the following local community papers:—Bloor & Young Gazette, Hillcrest Advertiser, Silverthorne Examiner, Bloor Echo, Beaches Smiles, Danforth Chronicle, North Toronto News, Weekly Times, West York Herald, East Danforth News, Riverdale Leader, Hudson Herald, West Toronto Weekly, Lakeside Echo, Bloor-Bathurst Advertiser, Parkdale Topics.

Arrangements were made with the larger establishments for store window displays, such as T. Eaton Co., Robert Simpson Co., Tamblin's and Loblaw's.

Arranged for poster display in connection with regular commercial windows in all stores, large and small.

Arranged for interesting slogan in advertising space in the daily papers.

The following firms were interviewed and arrangements made for window displays and advertising:—Ellis Bros., Jewellers; Robert Simpson Co., T. Eaton Co., C.N.R., C.P.R., Tamblin's, Liggett's, Woolworth's, Arnold's Kent's, Jewellers; Martin's, United Cigar Stores, Hennessy's Drug Stores, Martin's Restaurant, Murray's Restaurant, Ryrie Bros., Carnahan's Drug Stores, Tyrrell's Book Store, McAinsh Book Store, Stollery's, and Toronto Opticians.

This Committee feels that, taking everything into consideration, Dental Health Day was a great success, and looks forward to next year, when, with past experience, we hope to make the project bigger and better than ever.

Respectfully submitted,

(Signed) J. W. McDONALD,
Sec. Oral Hygiene Committee,
Academy of Dentistry of Toronto.

We feel that as a result of all the educational work carried on that day a good deal of interest was aroused and that much good will result.

A letter was received from Mayor Foster expressing his thanks for all that had been accomplished for the benefit of the health of the citizens of Toronto.

It is also significant to note that one of the public schools that had its dental survey just at that time, reported 107 cases completed by the family dentist during the next two weeks.

Respectfully submitted,

EDMUND A. GRANT, D.D.S.,
Director of Dental Services,
Dept. of Public Health, Toronto.

Some idea of the attitude of the members of the Medical Profession and the health workers of the Province may be gathered from the following editorial, which appeared in the *Public Health Journal*, which is the official organ of the Canadian Public Health Association:

DENTAL HEALTH IN ONTARIO.

The institution of a Dental Health Day in Ontario, on October 20th, is evidence not only of the capacity of the capable Director of Dental Services of the Ontario Department of Health, Dr. F. J. Conboy, but also of the growing realization of the great need for better care of the teeth. Once the relationship between teeth and mastication was the prime factor, and, indeed, practically the only factor in forcing us to take better care of our teeth. Now the effect of neglect is known to be not only inadequate treatment of food in the mouth, but all the results which may come from focal infection. Proper supervision and care of the teeth may make all the difference between health and protracted illness, and, finally, even between life and death.

Dr. Conboy has been successful in enlisting the support of many and varied organizations in his effort to create widespread interest in his campaign. Life Insurance Companies have distributed pamphlets by thousands. Various clubs and welfare organizations have taken an interest. Public meetings have been organized in various parts of the Province. Advertisers and the press have co-operated in a most friendly way, and last, but not least, the dentists of the Province have given a full measure of co-operation.

Measures of this type are essential in all fields of health organization, if we are ever to achieve success in our efforts towards educating the public to the end that illness and death may be prevented, and unfortunately many health officers take a long time to learn this essential truth. Dr. Conboy has the fine qualities of leadership which fit him for this type of work. He and the Ontario Department of Health are to be congratulated on the success of their effort.

A large number of talks were sent over the radio, some before and some on the Health Day. The one following gives a good idea of the material presented:

RADIO TALK.*

THE Ontario Dental Health Day is on Wednesday of next week (October the 20th), and reports from every section of the Province, show the keenest interest upon the part of all the people.

Over 85 years ago a committee of dentists waited upon the old Baltimore Medical School, and asked that the Medical Faculty assume the responsibility of teaching the science and practice of Dentistry. The refusal of that request resulted in the organization of the Baltimore College of Dental Surgery in 1840. This was the first dental school on this continent, and the movement has continued until to-day there are upwards of fifty schools. It was not until 1867 (twenty-seven years after the first school was organized) that a dental school was associated with a university. Practically *all* of the schools are *now* connected with universities.

* Broadcast CNRT, Toronto, October 15th, 1926.

Both the medical and dental professions, have lost much by reason of this independent development, but after eighty-five years the great Public Health Movement, that is sweeping over the world, has brought Medicine and Dentistry into closer co-operation in the rendering of health service to the people. Because of the separate organization of these two professions, there has, in the past, upon many occasions, been a serious lack of correlation between the treatment given by medical and dental practitioners. However, the newer knowledge, that disease in any part of the body may be carried by the blood stream to other parts (frequently resulting in disease far removed from the original point of entry), has possibly been the most potent factor in bringing about more sympathetic interest and co-operation between these two branches of health service. Each is realizing that the one profession is a complement of the other, and that, in the interest of the patient, the knowledge and experience of both professions is essential in the rendering of the best possible service. The type of disease referred to is called focal infection, and simply means that at a localized point, infection enters the body and results in systemic disease. The local focus may be situated in the tonsils, the intestinal tract, nasal sinuses, the teeth or other part of the body.

The teeth should be kept in a condition of health. We save the teeth in health to-day, not only for the sake of the teeth, but *also* for the sake of the *general health*.

As in all other public health work, prevention takes first place in the activities of Dental Health Day.

It has been suggested that in my radio talk this evening, I should outline something of the many activities which are being arranged for Dental Health Day, next Wednesday, October the 20th.

At the request of the Ontario Department of Health, the members of the Dental Profession agreed to provide free dental examination, advice and instruction in mouth care, to all who apply for it on that day.

The entire Province has been organized for this purpose. In the larger places, public clinics are being arranged, while in the smaller centres, the dentists will do the work in their own offices. In Toronto this service will be given by local dentists in the Dental Building of the University of Toronto, College and Huron Streets. In many places, the entire school population will be surveyed, and in some of the cities, x-ray pictures will be included when desirable. Some of the organized school services are giving advice to mothers in regard to pre-natal care and mouth hygiene for pre-school age children.

School teachers throughout the Province will give their pupils lessons in the care of the teeth and mouth. A special booklet giving teachers the information desired was distributed at meetings of the Teachers' Institutes. Many of the institutes were addressed by dentists, and we are glad to say that the teachers are giving this dental health effort their whole-hearted support. Mass meetings of school children will be held, when an illustrated talk on mouth health will be given, and in a number of places, essay competitions are being arranged.

The moving picture theatres are also making a splendid contribution to the success of the day. The Ontario Motion Picture Bureau has provided over 240 copies of a special picture which was prepared and staged by the Toronto Department of Health. The majority of the theatres in the Province are showing this film.

Radio messages are to be broadcast from all the stations in Ontario, and, in addition, from stations at New York, Buffalo, Port Huron and other places in the United States.

The Life Insurance Companies are also co-operating and have sent out special dental health folders setting forth a programme for the prevention of dental diseases, and in other ways are assisting the Department.

Most of the newspapers, both weeklies and dailies, are supporting the movement, and the retail druggists and the merchants' associations are arranging attractive window displays.

Many public meetings will be held. The various service clubs throughout the Province are having speakers on Dental Health at their weekly luncheons, and public meetings are being organized by Women's institutes, church organizations, Home and School Clubs, and welfare associations. Nearly fifty sets of scenery for the humorous dental play, "The Bad Baby Molar," have been sent out, and many sets of lantern slides and charts have been provided for illustrated addresses.

Manufacturers and distributors of food products and mouth toilet articles, as well as dental dealers, are assisting with the publicity, by including a reference to the Ontario Dental Health Day in their advertisements.

Attractive posters and automobile stickers have been distributed, and are available upon request to the Ontario Department of Health, Padina House, Toronto.

This is the first Provincial Dental Health Day ever held in the Dominion of Canada and the Minister of Health, the Honourable Doctor Godfrey, is to be congratulated upon undertaking such a helpful and progressive public health effort, and placing the organization of the movement in the care of Doctor F. J. Conboy, Director of Dental Services for the Province.

The Dental Health Day is going to be a great success, and the Department of Health, will, I am sure, receive your cordial support and practical co-operation.

For those who have "tuned-in" since I announced the date of the Ontario Dental Health Day, may I repeat, before closing, that it is next Wednesday, the 20th of October.

Pyorrhea and the General Practitioner*

D. P. MOWRY, D.D.S., L.D.S., MONTREAL, CANADA.

 HE unit of life is the cell. In the body millions of cells are united to form tissues and organs. The structure of these tissues and the shape of these organs owe their morphology to their *function* through the *ages*.

Thus it is that a people or race during their early years (when they have a *culture* and are *functioning*) are noteworthy for the perfection of their physical health.

As they degenerate into a civilization their tissues and organs obey

*Read before Canadian Dental Association, Halifax, August, 1926.

the law of the relation of form to function, and as the environment becomes physiologically abnormal these tissues, being organic and living and not mechanical, alter in response to the new function.

The following treatise is an attempt to present to the general practitioner in Dentistry the need in *all cases* to restore, where possible, and make artificial provision (tooth brush, etc.) where necessary, to provide the *physiological function* required by the tissues.

In the *Dominion Dental Journal* of March, 1922, there was reported a lecture by Dr. A. W. Thornton, in which he stated that the general practitioner in Dentistry should do his own pyorrhœa work.

This would indeed be "Utopian!" and, if carried out conscientiously by every dentist, would be the greatest single progressive step in modern dentistry.

At the present time, however, the demand for operative work is so imperative that, were he ever so willing, the dentist would be unable to find time to attend to the detail required for the treatment of pyorrhœa.

He must learn, however, if he has the incentive of service, to see the mouths of his patients through the eyes of the periodontist. His operative procedures will then be guided by the vision of what is best for the entire mouth, in preference to the narrower view of how to fill a cavity in an individual tooth. Remember that only in unfilled teeth having unbroken and healthy gingival margins do you find 100 per cent of germ-free pulps.

With rare exceptions in daily practice, the pyorrhœa case has previously presented the condition known as "gingivitis," and this is where the general practitioner is directly responsible. To quote that great man of science, Eugene S. Talbot:

"A few years hence the profession will regard a dentist, whose patients have pus oozing from the gums, as a prehistoric relic, and the patient as an individual whose filth provokes the contempt of his fellows."

To get as fundamental a concept of this question as possible, I shall use as a text (if I may be permitted to call it such) a very concise definition of disease, as suggested by Dr. Oertel, Professor of Pathology at McGill University, Montreal:

"Disease is only an exaggeration of structural and functional adaptation to environmental influence."

My attempt this morning, gentlemen, is to lay before you some fundamental principles for practical application which will be based on a dissection of this definition.

The very briefest survey of the structure must include development under two aspects:

I. *Phylogeny*, or the development of the species from an undifferentiated unicellular animal to the highly specialized creature now inhabiting the earth.

II. *Ontogeny*, or the development of the individual in one generation from the single cell to the adult form.

Phylogeny begins some five hundred million to a billion years ago, when unicellular life first appeared in the waters that covered most of the earth. An unicellular organism (for example, the amoeba) has no mouth; it simply indents itself or pushes out narrow bulges or projections known as pseudopodia which surround the desired object, and a simple rupture of the original outer membrane ingests the morsel and the wall closes together again.

From this simple cell to the highly complex human of to-day we can trace the development of the teeth. Beginning as an elaboration of the scales of the skin of the fish which has invaded the mouth cavity to assist in nibbling, sucking, grinding, etc., through use they slowly become a mass of pointed scales covering the edges and roof of the mouth. Slowly through the centuries of prehistoric time, as the rest of the body changes, the teeth respond to the law of form in response to function, and they become ranged in opposing rows. As the fish becomes amphibian, and the amphibian reptile, we note that the bones of the head begin to arrange themselves, and the teeth, confined mostly to the edges of the jaws, are now embedded in distinct sockets. The primitive pointed tooth develops one, and then two, extra points or cusps on the sides of the original, and as the reptile begins to develop mammalian habits, we discover the formation of the lingual part of the crown by an ingrowth of the basal cingulum. With the advance of the vertebrates in evolution—the great diversity of environment, such as habits, method of obtaining food, mating and feeding the young—numerous changes continue in shape, location and number of teeth—especially the formation of the relatively flat low-cusped molar.

One outstanding feature of phylogeny I wish to emphasize—in the primates (those mammalian types just lower than man) the long cuspids, the anterior inclination of the incisors and the dental arch, being in the shape of a long parallelogram, limit the movement of the jaws. In man, the cuspids are reduced to a level with the other teeth, the incisors are more nearly vertical, and the dental arch is rounder. From a prehensile biting or cutting function, the teeth of man to-day have approached very nearly the pestle-mortar type of relationship in function. This is well demonstrated in the Monson spherical theory, with which you are all doubtless well acquainted. The important bearing of this pestle-mortar relationship will be shown when we discuss function and traumatic occlusion.

Phylogenically the jaws develop from a simple opening in the epidermis to the massive bones we find in the higher apes. From then on to man, however, a degeneracy occurs, which is well shown in a study of the head from the anthropoid apes up to man. We note a progressive shortening and degeneracy of the face, nose and jaws, for the benefit of the higher structure—the brain. To quote from Talbot:

“The change of the shortening of the nose and face is nicely illustrated where the domestic pig is not required to root for a living. The arrest of the nose, face and jaws is not unlike that of the human. The law of use and disuse is finely illustrated in these two extremes.”

So much for the relation of structure from the aspect of Phylogeny.

Now what of Ontogeny? Most scientists are convinced that the growth of the individual in one generation from the single cell to the adult form, especially in utero, is a recapitulation of the History of the Race. That is not, however, the point that is most important at the present time. Rather do I wish to detail somewhat certain conclusions with regard to histological structure that are arrived at by a study of Ontogeny.

As you all know, the individual begins as a fertilized ovum, which is a single cell. This cell shows a rapid and spectacular growth, dividing first into two equal cells, then into four, and these four into eight, etc., until there is a solid mass of cells (morula). This soon hollows out, making a sphere whose outer border is a row of cells (blastula). At one point a dipping in or invagination takes place and continues until there is first a projection and then a complete inner lining of cells, with a slight space between it and the outer layer (gastrula). In the same region that the invagination took place, cells begin to bud off from both layers, and we now have the formation of a third—or intermediate—layer, of apparently similar cells.

These are the three fundamental layers known as ectoderm or outer, entoderm or inner, and mesoderm or middle.

From these three layers of cells develop all the tissues and organs of the body. Because of cells from each of these layers having a similar method of grouping together, if we know from what layer a certain tissue is derived, we can very closely judge its function.

Briefly, the ectoderm and entoderm go to form tissues in which there is a preponderance of cell over inter-cellular substance, and the cells are in close proximity one to another. That is, they form covering or protective tissues. The mesoderm for the most part goes to form tissues having a considerable amount of inter-cellular substance, and therefore we find such inside the body protected by ectodermal or entodermal tissues,

What does this teach us about the teeth and gums? Let us see. We left the developing embryo at the three-layer stage. All of these cells go on multiplying and *differentiating*. As early as the middle of the second foetal month there will be found, following the line of the future alveolar ridge, a slight heaping-up of the surface epithelium (epithelial ridge), while immediately beneath this proliferation of cells there appears a dipping-in of the deep or infant epithelial layer (early called the dental groove) in the direction of the future alveolar walls. This is known as the epithelial tooth band, and is continuous from one distal end of the future jaw to the other. After this tooth band has assumed certain proportions there appears on its lingual surface a thin membranous plate, tooth lamina, which should be considered as an inflection from the tooth band. We find, then, between the seventh and eighth week, the maxillary regions giving place to two bow-shaped bands (one for each jaw), each of which is preparing to throw out from its secondary lamina ten little buds, tooth buds, which soon develop into the germs for the twenty deciduous teeth; when these buds make their appearance they are simple, rounded bodies, placed somewhat closely together, but they do not long retain this simple form. The first change which takes place is one in which they appear to lengthen out into slender cords, the extremities of which soon begin to extend laterally, and a pear-shaped enlargement of the epithelial cells appears which, by invagination, later assumes a bell-shaped outline, which phenomenon is rapidly increased by a proliferation of connective tissue cells forcing into the concavity. This bell-shaped proliferation of cells given off directly from the tooth lamina to which it continues for a time attached, together with specialized connective tissue cells crowding into its concavity, constitutes the tooth-germs, the former being the enamel organ and the latter the dentine organ. It will, therefore, be seen that the enamel is dependent on the oral epithelium for its development (ectoderm), while the dentine springs from an entirely different source—the connective tissue of the jaw (mesoderm). Thus it happens that upon the eruption of the tooth through the gum, what appears as *two* separate tissues (enamel and gum) is in reality but *one*, developmentally speaking, both being ectodermal. Nature's plan of ectoderm to protect mesoderm is here apparent, and it is our manifest duty to restore and maintain this continuity of structure wherever and from whatever cause it is ruptured. So much for Ontogeny.

Now what of the dental and peridental structure, as we find it from the histological viewpoint?

As the tooth erupts, through the gum, the remnants of the amelo-blasts are drawn tightly over the enamel as an extremely thin, tough layer known as Naysmith's membrane. This is soon lost through wear on the exposed part of the crown, but in the base of the gingival crevice

these cells persist as a covering to the alveodental or peridental membrane, and constitute a minute bridge between gum and cementum at the cervical line.

A cross-section through tooth gum and alveolus viewed under the microscope will reveal the tooth in its alveolar socket. Exposed to the lumen of the beginning of the alimentary tract (for such the mouth is, strictly speaking) is the enamel, the hardest and most resistant structure in the body. The edge of this enamel at its margin rootward is covered by the cementum, a layer of modified bone which encases the whole of the tooth except, of course, the crown. We note that it is thickest as it approaches the apex, which is formed entirely of this substance. Encircling the enamel at the cervix is the stratified squamous epithelium of the gum in the shape of a relatively thick collar drawn tightly against the enamel by the underlying dental ligament, and forming what is known as the gingival crevice. This stratified squamous epithelium or gum is superimposed on a dense and tough connective tissue with three sets of fibres, and a rich blood supply, and is firmly attached to the periosteum of the alveolus. Between the periosteum of the alveolus and the cementum of the tooth, is the alveolodental or peridental membrane. It offers nourishment to the bone on one side and to the cementum of tooth on the other. It is connective tissue of moderate density, and is rich in its nerve and blood supply. This membrane contributes chiefly to the articulation between the tooth-root and the alveolar socket. There is no marked mobility, but there is a general elasticity provided by the specially distributed fibres, to provide against the severe concussions and strains incident to mastication. This membrane is the medium by which all sensations originating on the tooth surface are taken up and conveyed to the brain, making it the organ of the sense of touch to the tooth. To a considerable degree, this last fact of structure is the instrument whereby the reaction to lack of, or abuse of, function is conveyed to neighbouring tissues. This will be brought out more fully under the subject of "function."

Let us summarize at this point the structure we are examining this morning:

Twenty-eight or thirty-two teeth arranged in opposing form of a rounded arch, the lower row being set on a movable frame, the mandible, with the lower cusps forming a smaller arch than the upper, and in relation to it as a closely-fitting pestle to a mortar. In function, the mandibular joint is an arthrodial-diarthrosis (freely movable), and in bringing pressure between the occluding teeth presents a lever of the third class. These teeth, though having non-elastic crowns, are supported and anchored in the bony sockets of the jaws by a shock-absorbing membrane. The tissues surrounding the roots of these teeth are protected by the stratified squamous epithelium of the gum.

This is what Nature gives us, and constitutes our ideal, our model, our blue-print (call it what you will), towards which we should endeavour to restore all cases which present themselves for treatment.

Let us not forget our text:

"Disease is only an exaggeration of structural and functional adaptation to environmental influence."

Now what is the function of this structure we have been considering? Is it not designed for seizing, and crushing, an omnivorous diet? Does not the histological picture of the peridental membrane demonstrate beyond question the necessity for function if we are to maintain the tone of the tissue?

The stratified squamous epithelium of the gum (practically synonymous in cell structure, blood and nerve supply, with the palm of the hand and the sole of the foot)—does it not cry out—"I am designed for rough work, wear and tear, and must be used if I am to remain healthy and in harmony with contiguous tissue?"

What of the arrangement of the pericemental fibres, of the individual teeth, in conjunction with their anatomy? Is it not here evident that the anterior teeth are designed for powerful cutting and tearing, but not for lateral stress, and what food do we civilized people of to-day provide for that wonderful "mill" which Nature has given us in our molar teeth?

The consideration of the question of environment opens up a vast field for investigation and research. From such simple phenomena as the reaction of tissue to heat or cold, it carries us through the whole field of biological phenomena to the infinite realm of relativity, and the fourth dimension!

The environment of the tissues we are considering to-day may be viewed from two aspects:

I. Those factors acting from without or upon the surface of the gum, gingival crevice and tooth, and

II. Those affecting the tissue from within through the medium of the blood stream.

Normally, the surface of these tissues is covered by a mucilaginous film, and bathed by alkaline saliva. In such a media the normal bacteria of the mouth will thrive. I say "normal" bacteria, because the mouth is fundamentally the beginning of the alimentary tract, and the function of this oral flora is to digest debris remaining about the teeth, so that it can be washed away.

Quoting from Dr. Schneider:

"In cases where the bacterial food digestion of the mouth is interfered with, or hindered, as in pyorrhœa, then the use of tobacco, through clove chewing, use of alcohol, etc., etc., the

food particles become caseinated about the necks of the teeth, and may undergo partial putrefaction instead of digestion, resulting not only in unsightly teeth, but also in bad breath, unless the food particles are removed through rinsing, or by means of the tooth-brush."

If this debris be not removed, it has the effect of instituting a complex pathological and progressive symbiosis of the organisms of the mouth. Such a process must always be stopped if the tissues are to be restored to physiological function.

The environmental aspect from within brings up the whole question of stimulation to maintain circulation and tissue tone, which I shall emphasize in describing the use of the tooth brush. It also brings to our attention the question of the quality of the blood as affected by the general condition of the body, such as general disease, unnatural and deficient diet, auto-intoxication, etc.

Now when a case presents itself in which the tissue picture is altered, what has happened? It is very unscientific to say that the resistance of the tissue has broken down. That is why I object to the term periodontoclasia, i.e., the breaking down of the tissues surrounding the tooth. You might think we were working with wood or stone or some other inanimate material. Gentlemen, you are manipulating and treating organic tissue, living tissue—Periodontitis if you will, but not Periodontoclasia.

Now when a case presents itself which is not normal, all that has happened is that the living tissue has adjusted itself to a new environment either from within or without, or both, and it is "up to you" and "up to me" to restore the environment that is conducive to the harmonious or physiological life of the tissue. That is why we must understand the structure, and the function, and the histological picture, if we are to appreciate the importance of the environment.

Let us examine some of the environmental influences which alter the physiological adaptation of these tissues:—

1. Irregular teeth:
 - (a) Traumatic occlusion.
 - (b) Gingival trauma from mastication.
 - (c) Lack of occlusion.
 - (d) Abnormal lip, cheek and tongue pressure.
2. Soft foods and lack of natural foods.
3. Use of stimulants or narcotics, or neglect, bringing about abnormal growth of organisms of the mouth.
4. Dental restorations.
5. Any condition of the body in which the blood has become altered: Pregnancy, Diabetes, Acidosis, Infection, etc.

6. Abnormal saliva due to intestinal stasis.

7. Habits; mouth-breathing, tooth picks, gum chewing, etc.

I am not going to spend much time in talking to you about the details of treatment. Men far more famous than I have given you text-books and magazine articles innumerable on the pathology of "Pyorrhœa Alveolaris," "Periodontoclasia," "Interstitial Gingivitis," etc. What is here emphasized is the *physiology* of the structure you are dealing with.

What is most essential is that at least 90 per cent. of all your patients have one or more environmental abnormalities, sufficient to bring about an *exaggeration* of structural and functional adaptation (disease).

If you look at each mouth with the eyes of a periodontist, and restore the environment in so far as each case permits, you will do much towards not only curing and preventing Pyorrhœa, but you will discover, as the months and years go by, that the recurrence of caries is greatly reduced, and that the mouth is progressively healthier.

The treatment of Pyorrhœa (whether it be Periodontitis Simplex, or Pyorrhœa Alveolaris) consists in restoring the environment and bringing the structure as near to the ideal as possible.

Briefly, case management should include the following:

1. Complete radiograph.
2. Adjustment of the occlusion in function.
3. Restorations to restore lost tooth structures:
 - (a) Surface outlines.
 - (b) Contact point.
 - (c) Gingival margin; continuity of outline.
4. Thorough prophylaxis of crowns of teeth;
5. Tooth brush instruction.
6. Treat pyorrhœal pockets—normal depth 2mm.
7. Periodical prophylaxis by the general practitioner.
8. Refer stubborn, extensive, or Trench mouth cases to specialist.
9. Refer patient to physician for general examination.

It is my opinion that vaccines for the treatment of Pyorrhœa are of no value, except possibly in rare cases where an antogenous vaccine might stimulate the anti-toxin action of the blood.

Upon the persistence of the patient in the daily dental hygiene, and upon the periodical prophylaxis by the dentist, depend the cure and prevention of Pyorrhœa. In no other way under existing civilized conditions can you achieve success. Nature demands that the integrity of the ectodermal tissues be maintained.

Gentlemen, you are busy from day to day treating a structure that has degenerated, so far as its racial and recent history are concerned. This structure, in addition, has been progressively deprived in respect to

the function it has been called upon to perform, and in quality of nourishment it has been given through the blood supply.

The biological possibilities, however, in response to physiological stimulation are entirely intact.

Under existing conditions you must train your patient to use artificial means to supplement the deficiencies acquired by civilization.

This appliance is none other than the tooth brush—honoured by such names as Charters, Stillman and Hartzell, as the prime essential to dental health. WHY? Because, properly used, it cleanses the tooth surface of bacterial masses, and stops the progressive symbiosis. Because it provides the stimulation essential to cell growth and normal circulation. (Described use of tooth brush.)

In conclusion, gentlemen, you see everywhere throughout Nature the great law of the *relation of form to function*. Get the mouths of your patients into harmony with this law, and you will be doing much more than treating disease; you will be bringing about those conditions which make disease impossible.

And last, but not least, the drudgery and humdrum view of dentistry often caused by lack of vision, by a limited and narrow operative procedure, will be transmuted into the thrill of worth-while accomplishment; you will feel that you have a real part in the great cosmos, and that the "happy isles" are not so far away after all.

"He searched the whole world over
To find a four-leaved clover,
Which all the while had grown beside the door!"

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Stern necessity often proves to have been our best friend.

Bacteria In Relation to Enamel Fissures*

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BACTERIA and food debris are doubtlessly instrumental in the destruction of the teeth, even though there are still some factors missing for the thorough comprehension of the phenomenon of dental caries. If bacteria, therefore, are considered as one of the irritating causes of caries, it follows that wherever these lodge, destruction of the dental tissues may take place. Consequently it is of interest to show the relation of the size of bacteria to that of the fissures and crevasses of the teeth.

Dr. T. P. Hyatt called my attention to a quotation of Dr. A. E. Webster's in Johnson's *Operative Dentistry* (p. 172): "If every operator had the opportunity of seeing the micro-organisms of decay under a microscope and then seeing the width of the finest fissure under the same power, there would be no doubt in his mind as to what should be done." As it is impossible to photograph the entire width of even the narrowest fissure under an enlargement which will make the bacterial contents visible, the two accompanying diagrams were drawn.

Figure 1 shows a section through the crown of a molar with an incomplete fissure. (The incomplete fissure, as mentioned elsewhere,† is a fault in the enamel that does not reach to the dentine, but has an area of sound enamel separating it from the dento-enamel junction.) The tiny area at the base of this fissure, marked "X," has been enlarged 1,000 times.

In order to ascertain the exact width of small fissures, ten samples of the most minute type were selected. These varied in width between 0.07 and 0.26 millimetres. Such dimensions may not seem small to those not conversant with the metric system, but the following comparisons will show the minuteness of these figures. The Darby explorer, commonly used as probe to diagnose fissures, is 0.24mm. thick when measured one millimetre from its point; a fine tooth brush bristle is 0.17mm. thick; a fine scalp hair is 0.06-0.07mm. thick. These comparisons are added in order to show the minuteness of the fissures and also that no common sized grooves were selected for this purpose.

The size of cocci, on the other hand, varies, according to Zinsser,

*Read before Canadian Dental Association, Halifax, August, 1926.

†Bodecker, C. F., *Microscopic Study of Enamel Fissures with Reference to their Operative Treatment*.—*Dental Cosmos*, Oct., 1924.

from 0.15 to 2.0 microns, or, expressed in fractions of a millimetre 0.00015 to 0.002mm.

The size of the bacteria are drawn in exact relation to the size of one of the smallest fissures under an enlargement of 1,000 diameters. This shows 0.0005mm. (0.5 micron) bacteria as 0.05mm. dots, and the width of the fissure (0.07mm.) as 70 millimetres wide.

The bacteria are drawn as being loosely scattered throughout the fissure; that is, however, not the case in the mouth, for they are usually closely packed, intermingled with food debris and mucin, making up the well-known bacterial plaques. If the proper number had been sketched into the diagram, only a solid mass would be seen and no conception given as to the minuteness of the bacteria in relation to the fissure.

To estimate the approximate number of bacteria which may, and always do, lodge in fissures, is a simple matter. I do so, not with a wish to be dramatic, but with the intention to prove to both dentist and patient why 99 out of every 100 fissures decay.

For the purpose of this count, let us take an exceedingly narrow fissure:—

Wide	0.07mm.
Long	5.0 mm.
Deep	1.0 mm.

This minute cleft can be packed with 2,800,000,000 average sized cocci of 0.05 microns.

A slightly larger fissure, but one still narrower than the finest toothbrush bristle of 0.17mm.:—

Wide	0.14mm.
Long	5.0 mm.
Deep	1.5 mm.

would harbour 8,400,000,000 cocci!

If we take into account that caries soon widens the *base* of the fissure to ten times its original width without opening the entrance, we realize that the average mesio-distal fissure in a lower first molar contains far over 5,000,000,000 germs, one year after the eruption of the tooth. And this enormous number would only half fill a slightly enlarged carious fissure, the rest of the space being taken up with food debris and mucin.

We speak glibly of millions and billions, and yet these figures are really beyond our comprehension. Let me illustrate by the following example: Suppose that a person coughs without holding a handkerchief before the open mouth, and during each second of coughing one thousand bacteria were expelled. How long would it take till 5,000,000,000 bacteria passed out of the mouth? It would take over 66 days—that is

over two months, bacteria passing out of the mouth day and night at the rate of 1,000 per second. This gives us some idea of the number of bacteria harboured in an average sized fissure.

Before the tooth erupts, there are no bacteria present in the fissures; they are filled with the remnants of the non-calcified enamel organ. This, however, soon disappears to a great extent and food takes its place. Then, as the bacteria digest this food debris, the fissure becomes clogged with the bacterial plaques.

The conditions under which the bacteria are harboured in fissures are ideal for their growth, for they have warmth, moisture and food, being at the same time shielded against being dislodged. Under these favourable circumstances, it is not surprising that they multiply with great rapidity, and as the fissure is soon filled with bacteria, the new growth of germs is forced to pass into the mouth. *We may, therefore, regard fissures as ideal breeding places for germs.*

Patients will be shocked to think of the number of bacteria securely lodged in the depths of minute fissures and will insist on having them eradicated or filled. Let me say, however, in order not to exaggerate this phase of the question, that the average mouth harbours even more germs in the approximal spaces of the teeth and the gingival crevices. But there is one difference; these areas are mostly accessible to the tooth brush and floss silk and can thus be kept clean by a conscientious patient, whereas the minute fissures described above cannot either be cleaned by mechanical means or sterilized by the usual mouth washes or dentifrices.

From the foregoing description of the conditions of fissures, we comprehend the danger lurking in their depths. No groove, no crevice, if it is not self-cleansing, is too small to lodge bacteria and food and thus be a menace to the integrity of the tooth.

Consequently, all retentive, carious or non-carious fissures should receive the earliest possible attention of the dentist, soon after the eruption of each tooth, to prevent the penetration of dental caries into its depths.

American Dental Association 1927 Meeting



HIS is to officially announce that the Sixty-Ninth Session of the American Dental Association will be held in Detroit, Michigan, October 24, 25, 26, 27, 28, 1927.

HENRY L. BANZHAF, *President.*

OTTO U. KING, *General Secretary.*

Statement of the Facts and Opinions Agreed to by the International Meeting on Cancer Control, Held at Lake Mohonk, N.Y., U.S.A., September 20, 1926



ALTHOUGH the present state of knowledge of cancer is not sufficient to permit of the formulation of such procedures for the suppression of this malady as have been successfully employed for the control of infectious diseases, there is enough well established fact and sound working opinion concerning the prevention, diagnosis and treatment of cancer to save many lives, if this information is carried properly into effect.

1. The causation of cancer is not completely understood, but it may be accepted that for all practical purposes cancer is not to be looked upon as contagious or infectious.

2. Cancer itself is not hereditary, although a certain predisposition or susceptibility to cancer is apparently transmissible through inheritance. This does not signify that, because one's parent or parents or other members of the family have suffered from cancer, cancer will necessarily appear in other persons of the same or succeeding generation.

3. The control of cancer, so far as this subject can be understood at the present time, depends upon the employment of measures of personal hygiene and certain preventive and curative measures, the success of which depends upon the intelligent co-operation of the patient and physician.

4.—Persons who have cancer must apply to competent physicians at a sufficiently early stage in the disease, in order to have a fair chance of cure. This applies to all forms of cancer. In some forms early treatment affords the only possibility of cure.

5. Cancer in some parts of the body can be discovered in a very early stage, and if these cases are treated properly the prospect for a permanent cure is good.

6. The cure of cancer depends upon discovering the growth before it has done irreparable injury to a vital part of the body and before it has spread to other parts. Therefore, efforts should be made to improve the methods of diagnosis in these various locations and the treatment of the cancers so discovered.

7. The public must be taught the earliest danger signals of cancer which can be recognized by persons without a special knowledge of the

subject, and induced to seek competent medical attention when any of these indications are believed to be present.

8. Practitioners of medicine must keep abreast of the latest advances in the knowledge of cancer in order to diagnose as many as possible of the cases of cancer which come to them.

9. Surgeons and radiologists must make constant progress in the refined methods of technique which are necessary for the diagnosis and proper treatment not only of ordinary cases, but of the more obscure and difficult ones.

10. There is much that medical men can do in the prevention of cancer, in the detection of early cases, in the referring of patients to institutions and physicians who can make the proper diagnosis and apply proper treatment, when the physicians themselves are unable to accomplish these results. The more efficient the family doctor is, the more ready he is to share responsibility with a specialist.

11. Dentists can help in the control of cancer by informing themselves about the advances in the knowledge of the cause of cancer, especially with relation to the irritations produced by imperfect teeth and improperly fitting dental plates. They can also help by referring cases of cancer which they discover to physicians skilled in the treatment of cancer in this location. It may be doubted whether all dentists fully realize the help which can be obtained from x-ray photographs in revealing not only the state of the teeth but the condition of the bone surrounding them.

12. Medical students should be instructed in cancer by the aid of actual demonstrations of cancer patients, and this to a sufficient extent to give them a good working knowledge of the subject.

13. The most reliable forms of treatment, and, in fact, the only ones thus far justified by experience and observation, depend upon surgery, radium and x-rays.

14. Emphasis should be placed upon the value of the dissemination of the definite, useful and practical knowledge about cancer, and this knowledge should not be confused nor hidden by what is merely theoretical and experimental.

15. Efforts toward the control of cancer should be made in two principal directions: (1) the promotion of research in order to increase the existing knowledge of the subject, and (2) the practical employment of the information which is at hand. Even with our present knowledge many lives could be saved which are sacrificed by unnecessary delay.

Try, and you may. Don't, and you won't.

Regulations Governing the Conduct and Maintenance of X-Ray Laboratories



THE Board of Health of the City of New York has passed the following regulations governing the conduct and maintenance of x-ray laboratories:

Every application for a permit shall be made in writing on an official blank furnished by the Department, and must contain information concerning the building where the x-ray laboratory is to be conducted, whether incorporated, and if so the officers of the corporation.

The regulations further provide that every x-ray laboratory shall at all times be in charge and under the direction of a duly licensed physician or other person who is licensed under the laws of this State to diagnose and treat diseases and whose knowledge, experience and qualifications to operate and use an x-ray machine are satisfactory to the Health Department.

Every x-ray laboratory shall be so constructed as to confine within the operating room the rays emanating from the machine and it shall be equipped with suitable and necessary appliances and devices at all times when the x-ray machine is in operation for the proper protection of patients, operators and all other persons or property adjacent, contiguous to or coming in contact with the electrical or other current or force or spark generated or incident to the operation and use of the x-ray machine.

Permits may be revoked at the discretion of the Board of Health.

No permits shall be transferable as to the person or place. A permit is issued to a particular person, firm or corporation and for a given location and is not valid for use by any other person or in any other place than stated in the application for a permit.

Report of Meeting of Toronto Academy of Dentistry

W. G. L. SPAULDING, D.D.S.



DENTAL affairs in England are of increasing interest to Canadian dentists, and the estimation of Old Country standards held here are due for revision. Whatever we have thought of the English dentists' status and skill, now their organization for public health and their endowment of dental research have us with our tongues in our cheeks—thinking.

The Academy of Dentistry, Toronto, at their opening dinner meeting, were highly favoured in entertaining Professor Gilmour, Director of Dental Education in the University of Liverpool. He is also President-Elect of the British Dental Association, and sits on the Dental Benefit Joint Commission with Sir John Tomes and others.

Professor Gilmour said that under the new Health Act of Great Britain, developed since the Great War and greatly broadened October 1st, 1926, Government health insurance has now placed dental benefits on a par with medical benefits. The Government insurance scheme, as passed in 1911, charged men 11d. per week, and women 9d. per week, which developed a surplus, and the whole insurance plan had to be re-valued. In this revaluation, dental benefits were added, and in a very short time were the most popular of all benefits derived under the system. At first the dental benefit allowed the insured fifty per cent. of the cost of dental services, but later this was increased to cover almost the entire amount charged the individual by the dentist.

Of course, the system required a schedule of fees, in order to make it feasible, and the following, after some revisions were found necessary, stand as authorized fees which the dentist in England charges a member of this insurance group:

Fillings—mainly plastic	\$1.50	Extraction—entire removal ..	\$6.00
Root treatment—anterior teeth	1.25	Extraction—upper or lower, entire	3.00
Root treatment—posterior teeth	1.50	Anæsthetics	\$3.00 to 6.00
Crowns	8.00	Dentures—upper or lower ...	15.00
Extraction—without anæsthetic	.60	Dentures—both	30.00

Special estimates are also provided for.

This service has the supervision of the Joint Commission, chosen from local Dental Societies, medical men, and Government representatives.

Some exploitation on the part of dentists, as well as patients, was looked for and realized, but afterwards corrected.

Professor Gilmour at first opposed raising the standard of dental education and of the preliminary requirement to that of the medical profession, on the ground that the medical profession was a large body, while the dental profession was not over-filled. When economic conditions in England improve, he anticipates need for many more qualified dentists.

The war disclosed shocking mouth conditions in Britain. The low state of dental service as a health factor led to an arrangement of organization which, under earnest administration, has grown wonderfully well.

The Government health insurance scheme involves fifteen million people, so it is evident that it is of national scope, and, without a doubt, the result will be reflected in the health and virility of the British at

home. Preventive dentistry was not stressed by the speaker, however, and no doubt the fourteen thousand registered dentists, plus the eight thousand unregistered ones, in Britain, will develop presently in that direction.

The registered dentist pays \$25.00 a year to continue his license to practise, and an annual income to the British Dental Association of a quarter of a million dollars is realized, which is used to advance the public dental health and to improve the teaching and status of Dentistry.

Post graduate courses are held, the proceedings published, research clubs and individual research assisted substantially, and industrial research plotted. Industrial research we take to mean the field of improved dental materials and manufacturing processes.

The Research Committee of the British Dental Association has in hand a splendid list of research ventures, selecting men capable and qualified. Some of the studies and investigations are:

Causes of dental diseases.

Bacteriology of dental caries.

Structure of enamel.

Development and formation of the teeth.

Normal method of growth.

Nutrition of dentine.

Caries in school children.

Dental alloys and amalgams.

Materials used in denture construction.

Vulcanite rubbers.

Metallurgical research.

This list compels the feeling that there is a broad and deep development of dental knowledge going on in England, and an effort to learn and correct the underlying causes of dental disease.

Dr. Fish, of Bristol, claims to have demonstrated a lymphatic system in both dentine and enamel, and to the best of our knowledge this is the first time it has been done. The existence of lymphatics, even in the dental pulp, has been widely doubted and often denied in the past. Given proof and acceptance, this will prove a great stimulus to research in pathology of dentine, and will have a bearing on the entire problem of saving natural teeth.

Professor Gilmour attended the Philadelphia Sesqui-Centennial meeting of the International Dental Congress, and spent weeks studying dental education on this side of the Atlantic. His address to the Academy of Dentistry, Toronto, was his second presentation to a North American dental audience, having addressed the Chicago Dental Society a few days previously.

Paying kindly and affectionate tribute to the late Dean James Bran-

ton Willmott, for whom he had formed a profound respect and genuine admiration, he placed himself at once in the esteem of his hearers.

Speaking also, Dr. A. J. MacKenzie said that, due to the removal of such dental focal infection, it is reported by the medical profession that there is very considerable reduction of certain forms of rheumatism, notably the fibrositis and myositis.

Dean Secombe announced the consideration in the University of Toronto, of degrees of Bachelor of Science in Dentistry and Master of Science in Dentistry. After 1926, Honour Matriculation would be required to enter upon the study of dentistry. Dental Nurses in 1927-3, before graduating will be required to take two months' training with a dentist in private practice.

Dr. Arthur Day made an appeal for the support of the Dental Health Day by the profession, and to interest themselves in humanitarian dentistry at all times.

Dr. E. A. Grant outlined the work of the dental services in the civic Department of Health and in the Public Schools of Toronto.

Canadian Dental Golf Association

FORMATION of a Canadian Dental Golf Association was effected at the concluding session of the annual convention of the Canadian Dental Association, which took the form of a dinner held at the Halifax Golf and Country Club.

Following are the officers of the new association: President, Dr. M. Magee, Saint John, N.B.; Vice-President, Dr. W. M. McGuire, Simcoe, Ontario; Secretary-Treasurer, Dr. Warren C. Oxner, Halifax.

The dinner was presided over by Fred Pearson, Vice-Chairman of the Board of Governors of Dalhousie University, assisted by Frank Chipman, President of the Ashburn Golf Club.

Following the formation of the association the prizes won by the dentists at a Golf Tournament held over the course of the Ashburn Club were presented by Mr. Pearson.

The Championship cup, presented to the Canadian Dental Golf Association by the Nova Scotia Dental Association, for the best score for 18 holes, was won by Dr. Rice, of Halifax, with the gross score of 84. This cup is a perpetual trophy. The runner-up was Dr. Oxner, whose score was 85. Dr. Oxner was presented with a pair of military brushes donated by the L. D. Caulk Company, of Canada.

The Medal Play cup, donated by Dr. G. K. Thomson, of Halifax, was won by Dr. Oxner, with a score of 69. This cup will be held permanently by the player winning it three times.

The runner-up was Dr. W. H. H. Beckwith, of Halifax, who was

awarded a dozen golf balls, presented by the Dental Company of Canada.

A silver cigarette case, donated by the Maritime Dental Supply Company, for competition by Maritime Dentists only, was won by Dr. Garfield Macdonald, of New Glasgow.

Dr. Fred Mallory, of London, England, a former Canadian, donated a silver cup for handicap men over 20. It was won by Dr. Leon Fluck. The runner-up was Dr. Millett, of Dartmouth, who carried off one dozen golf balls donated by the Lavis Chemical Company, of Montreal.

A gold-cased tooth brush, donated by the Pepsodent Manufacturing Company, was won by Dr. J. M. Magee, of Saint John.

Dentists who became members of the Canadian Dental Golf Association are as follows: Dr. Harding, Yarmouth; Dr. Millett, Dartmouth; Dr. J. M. Magee, St. John; Dr. McGuire, Simcoe, Ontario; Dr. J. W. Clay, Calgary; Dr. Armstrong, Ottawa; Dr. Langille, Truro; Dr. Garfield Macdonald, New Glasgow; Dr. E. E. Robbins, Charlottetown, P.E.I.; Dr. Fluck, Dr. Climo, Dr. Oxner, Dr. Logan, Dr. Thomson, Dr. Rice, Dr. Gray, and Dr. Hennigar, of Halifax; Dr. H. A. Crowell, Dr. J. M. Dixon and Dr. Hart.

SLEEP AND THE PRESENT-DAY CHILD.—“I maintain that the want of sleep has by far the most to answer for in the badly-developed and soft nature of the teeth of the present-day child. I suppose we as dentists agree that the teeth of this generation of children cannot be compared with the teeth of the same class of sixty to eighty years ago; and the children at that time were put to bed at a respectable time—six or seven o'clock in the case of children from two to seven years of age; those aged seven to twelve might be allowed to remain up to eight o'clock; then they had the chance to get the sleep which Nature required to repair the waste and renew the vigour necessary for an active, growing child. How often do we see children in arms, wee mites from two to seven, or even up to ten years of age, out in the streets (as I did last night in Sunderland) at nine or ten o'clock at night, when most of them ought to have been asleep three to four hours previously. I was speaking lately on the subject to a school teacher, and she assured me that she was fully persuaded that want of sleep was responsible for the dullness and want of attention early in the mornings in a number of scholars. I suppose advice is given at child welfare centres on the amount of sleep required by a growing child (I am not speaking now of children in arms), but, if not, then here is scope for propaganda work both for voluntary helpers and officials.”—*T. W. Morton, L.D.S., R.C.S., Edin., in The British Dental Journal.*

THROUGHOUT CANADA

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Provincial Editors will appreciate receiving from all local societies copies of papers, society proceedings or personal notes, for publication.



MARITIME PROVINCES.

THE following officers were elected, for the ensuing year, at the annual meeting of the Prince Edward Island Dental Association:—President, Dr. George Green; Vice-President, Dr. A. W. Leard; Sec'y.-Registrar, Dr. J. S. Bagnall; Executive Council: Doctors George Green, A. W. Leard, J. S. Bagnall, J. H. Ayers and A. B. Reid.



The Halifax Dental Society commenced the winter programme with the annual business meeting. The following officers were elected:—President, Dr. G. R. Hennigar; Vice-President, Dr. W. G. Dawson; Sec'y.-Treas., Dr. H. S. Crosby; Property Officer, Dr. J. Stanley Bagnall; To complete Executive, Dr. G. A. Chudleigh. The programme which has been drawn up for the winter includes several papers on subjects of particular dental interest, and also several papers of wider interest.



A case which is of particular interest to the dental profession is to come up for early appearance in the Courts at Halifax. The point centres on the responsibility of the dentist in the case where a patient dies in his office, following the administration of a general anæsthetic by a medical practitioner.



The annual convention of the Nova Scotia Dental Association this year was a purely business one, due to the fact that the meetings of the

Canadian Dental Association were held at the same time. The usual reports were read. That of the Secretary-Registrar was particularly interesting, in that it chronicled the very satisfactory condition in the Province at the present time of the illegal practitioner question. The Board, during the past year, has been able to clear up all cases of illegal practice. In the two cases which were taken to court convictions were obtained. Dr. Faulkner was given much well-merited praise for his work as Secretary-Registrar.

The Annual Convention next year is to be held in Sydney. The dates have not yet been set. There should be a good attendance, as it is many years since the Association has met in Sydney, and for those who travel by auto, there are few more beautiful trips than the routes which skirt both sides of the Bras d'Or lakes. The election of officers resulted as follows:—President, Dr. J. T. Roach; 1st Vice-President, Dr. T. Melanson; 2nd Vice-President, Dr. J. P. Parker; Secretary, Dr. J. Stanley Bagnall; Executive Committee: Doctors J. T. Roach, T. Melanson, J. P. Parker, J. Stanley Bagnall, A. F. Hogan.

* * *

Dr. Victor Calkin has moved from Pugwash and opened an office in New Glasgow.

The profession in Nova Scotia has lost two of its old members by death, in recent months. Dr. F. S. Anderson, who registered in 1897 and practised in Bridgetown, and Dr. J. A. Thomson, who was among the first to register, after the passing of the Dental Act in 1891. He practised in a number of the smaller towns in recent years, but chiefly in Goldboro.

—J. S. B.

* * *

QUEBEC.

MONTREAL DENTAL ASSISTANTS' ASSOCIATION.



THE second regular meeting of the Montreal Dental Assistants' Association took place at the Universite de Montreal, 1570 St. Hubert Street, on Thursday evening, October 21st. Twenty-four Dental Assistants were present. All showed great enthusiasm for the organization and promised to do their best to make it a success.

It was decided that all future meetings should take place the third Monday of each month.

Permanent officers were elected as follows: Mme. A. Guay, President; Miss E. Currie, 1st Vice-President; Mme. DeCarrefel, 2nd Vice-President; Miss M. MacLean, Treasurer; Miss R. U. Ratner

and Mme. Smith, Secretaries; Chairman Membership Committee, Miss Payne; Chairman Publicity Committee, Miss Rogerson; Recording Secretary, Miss T. Moscovitch.

* * *

EASTERN ONTARIO.

 R. H. A. CLARK, of Brockville, M.L.A. for Leeds in the late Government, is again the Conservative candidate in that riding. Dr. Clark is also a member of the Brockville Utilities Commission.

S. G. McC.

* * *

MANITOBA.

 N November 2nd, at the Fort Garry Hotel, there was an important meeting of the Winnipeg Dental Society, addressed by Dr. Stewart, Superintendent of the Manitoba Sanitarium at Ninette. Dr. Stewart spoke chiefly of the relation of infection of oral origin to lesions of the lungs, illustrating his discourse profusely with lantern slides. He did not read a paper, so I shall endeavour to mention very briefly some points touched on.

He pointed out that septic infection of the upper respiratory tract was the most common disease, in the form of colds and influenza, thereby stressing the importance of mouth cleanliness. Infections were classified into three groups, as follows:—

1. Easily apparent infections in the mouth.
2. Infections following measles and other diseases.
3. Infections following operations.

In cases of dental infection and T.B. the principal treatment consisted of dental treatment and rest. Cases were cited under the following headings, *all* of which had made *some* improvement by oral prophylaxis and rest:—Cough, purulent expectorations, spitting blood, short breath, slight x-ray signs of T.B., recent flares, chronic bronchitis, and some with a series of other infections.

Dr. Stewart explained how the use of lipiodol had made the x-ray of so much greater value in the diagnosis of septic conditions of the lungs.

* * *

The Golf Tournament of the Winnipeg Dental Society closed with a banquet at the Fort Garry Hotel, at which the prizes were presented. The Silver Cup, donated by The Ash-Temple Company, for winner of those under 100, was won by Dr. B. L. Toombs. The Gold Cup, also

donated by The Ash-Temple Company, for scores over 100, was won by Dr. Douglas Brown.

* * *

Readers interested in the malpractice suit against Dr. Powers, of Brandon, will be glad to hear that a new trial has been ordered by the Manitoba Court of Appeal. After judgment had been obtained against Dr. Powers by plaintiff, the Manitoba Dental Association supported Dr. Powers in an appeal on the grounds of "no negligence" and "ordinary skill employed". Two of the appeal judges held that the case should have been non-suited, but the other three ordered a new trial. This is the standing of the case at present.

* * *

The officers of the Winnipeg Dental Society this winter are:—President, Dr. E. L. White; Vice-President, Dr. B. E. Brownlee; Sec.-Treas., Dr. K. M. Johnson; Exec. Committee, Drs. B. Toombs, H. Hodgson.

—W. W. W.

* * *

ALBERTA.



T the first meeting of the Edmonton Dental Society for the year, held at the MacDonald Hotel, November 2nd, the following officers were appointed:

President—Dr. Leslie McIntyre.

Vice-President—Dr. Robert Decker.

Secretary—Dr. Alex. Gemeroy.

The Executive of the preceding year was re-elected for the purpose of carrying through the plan of management of the Western Canada meeting, to be held in Edmonton next June, which they had inaugurated.

The programme and clinic committees are as follows:

Programme: Drs. Jas. McPherson, Alex. Gemeroy, Robert Decker, Jas. Carmichael.

Clinics: Drs. Arthur Rooney (Chairman), L. V. Janes, J. G. Roberts.

Chairmen were appointed to other committees as follows:

Publicity: Dr. Leslie McIntyre.

Exhibits: Dr. O. F. Strong.

Finance: Dr. Nelson Hayes.

Transportation: Dr. S. M. Snedden.

Hotel Reservations: Dr. Marcus Dunsworth.

Membership and Registration: Dr. C. E. Eastwood.

Entertainment: Dr. M. A. McIntyre.

—J. W. C.

The COMPENDIUM

This Department is Edited by
THOMAS COWLING, B.A., D.D.S., Toronto.



HEMORRHAGES IN THE BUCCAL CAVITY.

DENTISTS have become so familiar with the use of adrenalin that ordinary dental operations cause little or no concern. There are occasions, however, when especial skill is required even in simple cases if disastrous results are to be forestalled. M. Wassmund, of Berlin, in the May issue of *Zahn Rund*, calls attention to the frequency of extensive and protracted bleeding in the mouth which is physiologic for women just before the menses, when the ovarian hormone is preparing blood. Operations at this time are usually accompanied with excessive hemorrhage which is very difficult to control; adrenalin is conspicuously inefficient in controlling this type of bleeding. It will also be observed that at this particular time the gums and buccal mucosa are hyperemic, hence ordinary prophylactic treatments are frequently accompanied by a marked bleeding of the tissues. Although such a condition contributes to the difficulties of the operation, it cannot be said that there is any real danger except there are evidences of systemic ailments such as jaundice, chronic heart disease, nephritis, etc., when special precautions must be taken. Often general hemostatics must be employed, and in such cases the first preference is for intramuscular injections of gelatine, given also as prophylactic along with some calcium salt (lactate) in the form of "comprets." An ordinary saline infusion may sometimes be used as a substitute for transfusion. In some cases heart stimulants, such as caffeine, alcohol, camphor and oxygen inhalation may be required.

A case of unusual interest for exodontists, is reported in the May issue of *Deutsch zahn Wehnschr*, by K. Zilkens, of Berlin. It deals with the death of a twelve-year-old boy in a clinic at Cologne, following the extraction of a tooth. The boy complained of a toothache and a tender left mandible. The affected tooth was a second molar,

carious and loose. The extraction was very easy, but as soon as the tooth was removed a severe hemorrhage ensued. Everything was done to stop the bleeding but the patient died while the remedial measures were being used. The autopsy showed a cavernous angioma of the mandible which had developed in the smaller branches of the facial vein or pterygoid plexus. There was evidence also of recurrent hemorrhage which was unchecked even by carotid compression. This fact, added to the clinical evidence of absence of inflammation, should have attracted attention and suggested prophylactic measures. Had a correct diagnosis been made, ligation of the carotid would have preceded the extraction of the tooth.

RECIPROCITY IN RESEARCH.



CONFUCIUS, when asked for the formula of a successful life, replied that all the requisites were to be found in reciprocity. That there has always been such reciprocity between many scientific bodies throughout the world is well known. In the realm of medicine new discoveries are freely distributed for the benefit of mankind. Such is the meaning of altruism. The true scientific spirit should never be shackled by outworn traditions or limited by national boundaries. Tennyson believed in the universality of learning when he said: "Let wisdom grow from more to more."

When reviewing dental literature one is impressed with the number of theories that recur at almost regular periods, and for a time hold the centre of the stage. This is usually referred to as the swinging of the pendulum. To many, such vacillations are not fraught with any particular significance; in reality, however, it is a sign of weakness. It never denotes strength; rather, it is a confession of incomplete knowledge.

Progress in any science is facilitated through the capitalization of previous findings. To do this there must be reciprocity and international contact. A great deal of dental research has been done by individuals and groups working as isolated units. So there has been much traffic over beaten paths. The profession would rather have the energy used in discovering new paths.

In an editorial in the March, 1926, issue, *The New Zealand Dental Journal* says that Dr. B. Gottlieb, of Vienna, an internationally recognized authority on Pyorrhea, believes that much of the research regarding the etiology of Pyorrhea has been handicapped because it has been carried on mostly without reference to similar and contemporaneous researches by other investigators. An example of this, he states, "is the

matter of traumatic occlusion which has been revived during the last few years by English and American investigators, it being overlooked that for several decades Karolyi had exhausted every possibility on this etiological side, and that many important works have appeared on this subject by Boda, Faulk, Peter, Weski, etc."

THE TEETH AND HABITS OF THE SIWASH.

N a very entertaining account of his visit with the Siwash Indians of the United States, Dr. E. H. Stanley, in the *International Journal of Orthodontia*, August, 1926, comments upon the ill-effects of new life and food habits upon these primitive tribes. The Siwash Indians have always been noted as splendid examples of physical development. In an attempt at bettering the condition of these people, the government, some thirty-five years ago, placed the young of the tribe in dormitories where they were trained to eat at a table and sit on chairs, to use dishes, knives, forks, etc., and to deport themselves as white children do. The older members of the tribe were not restricted to any great extent, and followed rather much their accustomed mode of living.

After this experiment had been under way for a few years it was found that the younger members of the tribe were suffering from dental caries to such an alarming extent that an investigation was decided upon, and Dr. Stanley was asked to carry out the inspection of both old and young members of the tribe, which consisted of approximately eight hundred members. Reporting his findings, Dr. Stanley says in part as follows:

"My notes recall that the old Indians were free from caries, unless we count attrition as a decay. The wear was to the gum-line in all the old, and in some a few teeth were missing, but in the great majority no decay was discovered. Not so with the young people. They, without exception, had caries. What is known as 'white decay' was common. The result of my report was to send back to the wigwams, spuds and fish, the entire bunch that had been pampered by the government. . . . The influence of the white man on these Indians has not been conducive to physical improvement. . . . These wild men developed themselves to be marvels of strength and physical beauty. The perfect development of the teeth and jaws was destroyed in one generation by a change of food and environment."

The time is not far distant when this problem of food habits must be given the attention that its importance warrants. Prevention rather than repair should be the watchword of our profession.

A RECURRENT SCARE.



THE old problem of the amalgam filling is once more before us for consideration. Prof. A. Stock, who is head of an Institute of Applied Chemistry, read a paper before The Berlin Dental Society, in which he stated that it is possible to show cases of mercurial poisoning from amalgam fillings. He further stated that he had himself suffered for many years from chronic catarrh of the nose and the oral cavity for which he consulted several specialists but was unable to secure relief. He discovered that the air in his laboratory contained a minimal quantity of mercury vapour, sufficient, however, to produce symptoms of poisoning if inhaled over a long period. Concluding that he had an idiosyncrasy towards mercury he had all amalgam fillings removed from his teeth. When this was done the symptoms, which had been in evidence for many years, disappeared. It was also found that old fillings do not give off as great a quantity of mercury as do the new ones. By experiment he ascertained that the air inspired by a person whose teeth were filled with amalgam contained mercury even when the fillings were three years old.

In the discussion of this paper Prof. W. Dieck, of the Dental Institute of Berlin University, stated that the dangers of amalgam fillings have been known for a long time; that it was also known that no ill-effects are possible after the amalgam has hardened. He was of the opinion that Prof. Stock had an unusual idiosyncrasy towards mercury, otherwise the minute quantity in the air would not cause annoyance.

Prof. Schultz expressed the opinion that little or no poisoning would result from amalgam fillings unless they were new or had become defective. He also thought that medical men should carefully avoid any suggestion of mercurial poisoning when taking the history of neuresthenic patients because they are apt to show symptoms of poisoning even through directing their attention to the possibility of its occurrence.

Prof. Bruck did not think that there is any serious danger of poisoning from amalgam fillings and reminded his audience that strong solutions of sublimate of mercury are often administered to the nose and the oral cavity without causing any harm to the patient.

TO REMOVE FACINGS FROM BRIDGES.—As there seems to be a diversity of opinion in regard to the proper method of removing cemented facings from bridges, may I offer a simple method I use in my office? Leave the bridge in commercial hydrochloric acid overnight, and you can very easily slide off every facing. I wish to emphasize, however, the necessity for using commercial hydrochloric acid, as the pure or concentrated acid might cause damage. This method is so simple it is surprising that it has not been offered to the profession heretofore.—*George G. Weston, Dental Cosmos.*

Canadian Dental Hygiene Council

W. C. TROTTER, B.A., D.D.S., TORONTO.



THE Canadian Dental Hygiene Council is the clearing house for oral hygiene activities in the Dominion of Canada. Its membership is made up of both laymen and dentists. We are anxious to have the co-operation of every public-spirited man or woman who realizes the importance of mouth health to the individual and the community.

General the Honourable S. C. Mewburn, K.C., of Hamilton, is President of the Council, and Mr. E. E. Reid, B.A., Manager of the London Life Assurance Company, is Vice-President. The Executive Committee is composed of fifteen members, as follows:

Dr. A. J. Broughton, Toronto.

Dr. H. E. Eaton, Toronto.

Dr. A. W. Ellis, Toronto.

Dr. Eudore Dubeau, Dean of Faculty of Dentistry, University of Montreal.

Dr. D. J. Ferguson, Saskatoon.

Dr. E. A. Grant, Toronto.

Dr. C. H. Juvet, Ottawa.

Dr. Arnold Mason, Toronto.

Dr. J. F. Morrison, Winnipeg.

Dr. R. J. Reade, Toronto.

Dr. Wallace Secombe, Dean of Faculty of Dentistry, University of Toronto.

Dr. G. N. Stultz, Halifax.

Dr. W. Cecil Trotter, Toronto.

Dr. Ray Wilson, Vancouver.

Representative on Council from Red Cross, Dr. Geo. C. Nasmith C.M.G., Toronto.

Dr. Harry S. Thomson, Field Secretary, Toronto.

I have the honour to be Chairman of the Executive Committee; Dr. E. A. Grant is Honorary Secretary and Dr. Harry S. Thomson is the General Secretary and Field Officer. The full Executive meets about once a month, and in between these meetings the work is carried on by a sub-committee, consisting of Drs. Grant, Reade, Ellis and Trotter, together with the Field Secretary, Dr. Thomson.

There is complete harmony and co-operation between the Canadian Dental Hygiene Council, the Oral Hygiene Committee of the Ontario Dental Association, and the Provincial Dental Health Officer, Dr. F. J. Conboy. Overlapping and misunderstanding is avoided by having a few men members of both committees. The conception these bodies have of the relationship and duties of the various oral health organizations of the Dominion is well explained by quoting the following classification of duties agreed to and adopted by both the Hygiene Council and the Ontario Oral Hygiene Committee.

1. Canadian Dental Hygiene Council with its Executive Committee and Field Secretary: To look after Dominion matters;

(a) Work among immigrants; foster children; Dominion Institutions. (b) General Educational work in unorganized provinces and districts having in view the future organization of these, the same as

Ontario is now organized. (c) General assistance to provinces and districts already organized such as Ontario.

2. Provincial Oral Hygiene Committee, with its Secretary or Director of Dental Services: To look after Provincial matters;

(a) Such as Provincial Institutions, asylums, jails, hospitals, etc.

(b) To work in unorganized districts. (c) To assist local or district societies.

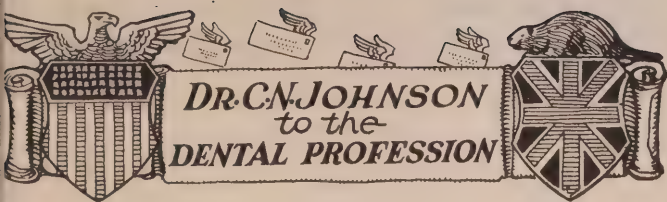
3. Local or District Oral Hygiene Committee, with its Secretary or School Dental Officer: To look after purely local institutions and school work, and to carry on general campaign of education in their district.

According to this arrangement the Canadian Dental Hygiene Council is co-operating with and assisting the Oral Hygiene Committees in the various provinces and districts outside of Ontario, having in view the ultimate organization of these provinces under a Provincial Dental Health Officer, the same as in this Province. Upon request from Dr. Conboy, of the Ontario Oral Hygiene Committee, we are assisting with their work wherever they may find it desirable. Our Field Secretary, Dr. Harry S. Thomson, has had the opportunity of being of service in this way on several occasions, and he has also been of considerable assistance to the Toronto Academy of Dentistry in the series of lectures instituted by them to be given to the private schools of the City of Toronto. Not only does the Council hope to secure the appointment of a Dental Health Officer in each of the Provinces, but also to have a Dominion Dental Officer appointed by the Federal Government at Ottawa. This officer will then not only look after Dominion Institutions and matters involving the general health of the Dominion from a mouth standpoint, but will also correlate the work of the various provinces and of their provincial dental health officers.

At present we are actively endeavouring to make satisfactory arrangements whereby we may be able to secure a comprehensive mouth examination and survey of immigrants and foster children upon their arrival in Canada, with a view to having any defects cared for, thus helping to make them happy, healthy citizens of Canada.

I take this opportunity to urge every dentist to make it a point to familiarize his representative at Ottawa with the objects of this Council and the Dominion-wide work it is doing towards the general improvement of health throughout Canada, and with its right to share in the financial assistance annually given to similar organizations throughout our land.

We deeply appreciate the generous assistance we have received from the Ontario Dental Association, and we also have much to thank the C.O.P.A. for in the way they have so splendidly loaned us the services of Dr. Harry S. Thomson.



An Open Letter to the Plumber

MY Dear Sir:—I am not your enemy—I wish I could convince you of that. I have never knowingly done you an injury; in fact I have tried to be friendly with you. Why is it then that you treat me as if I were your sworn foe? Frankly I cannot understand you. Every time you come into my home or my office, no matter how kindly I treat you, I am made to feel at once that you have it in for me, and are determined to get even with me. If I had publicly called you a pirate or a robber you could not display a more bitter mood toward me. You look at a leak as if it were all my fault—even when you may have repaired the leak a few days before. I am made to feel by your superior airs that I am an encumbrance on the face of the earth, and that my house is not good enough for you to put your foot in. The younger you are the worse you are. You saunter in with a pipe in your mouth, or possibly you compromise on a cigarette—the stub of which you throw in any convenient corner. Regardless of the rights of others you go your own inconsiderate way with a blazon effrontery—if you are young enough—which would put to shame the most notorious outlaw on record. Your motto seems to be “Never do to-day what you can put off till to-morrow.” You are the great original procrastinator. No matter how kind and considerate I try to be, you continue your attitude of superciliousness and surliness even in face of the fact that I am paying you money—yes, paying you liberally for services that you never render. Please note that I am making no reference to excessive charges—I recognize the fact that men must be well paid for doing the kind of work you do—but this is no argument in favour of killing time and charging for it. Nor is it a justification for misrepresenting the amount of time spent—for instance sending a bill for eighteen hours of time when the utmost limit spent, counting the time going and coming from the job—was less than four hours.

I realize that there are dishonest men in all callings, and I am not singling you out as the sole representative of dishonest practice—in

fact I am not complaining so much of your dishonesty as I am of your overbearing ways. I am beginning to object to being trod on as a worm under your foot, and some unlucky day I fear I may find myself putting the toe of my boot where it will do the most good, and showing you the sidewalk.

But I really and truly hope I shall never be tempted to do so undignified a thing as that. I would much rather live in perfect peace with my fellowman and be charitable with his limitations, as I would have him be with mine; but I say this in all seriousness that if the time ever arrives when I become so indifferent to the rights of others as you have sometimes been of mine, I hope a kind friend or kind providence will remove me from the face of the earth, and see that I encumber it no more. Frankly I would rather not live than to assume an attitude of indifference to the rights of others, and injustice in the ordinary dealings of life. I do not ask to be a saint—knowing full well how impossible that would be—but I at least want to be decent with my fellowman, and I am going to make bold enough to suggest that it would be well if you would try to be also.

Sincerely your friend,

C. H. Johnson

P.S.—I am not classing all plumbers in your category—I am classing only those with whom I have dealt.—C.N.J.

Testimonial Dinner to Doctor Augustus Downing



COMMITTEE of friends of Dr. Augustus Downing, Deputy Commissioner of the New York State Department of Education, is arranging for a complimentary dinner in his honour at the Hotel Commodore, 42nd Street and Lexington Avenue, New York City, December 9, 1926, at 7.30 p.m. The presiding officer will be Dr. Livingston Farrand, President of Cornell University, and the principal speakers of the evening will be Dr. Nicholas Murray Butler, President of Columbia University, and Dr. Wendell C. Phillips, President of the American Medical Association.

Those desiring to attend should communicate with Dr. James Pederson, 40 East 41st Street, New York City.

DIRECTORY of DENTAL MEETINGS & OFFICIAL ANNOUNCEMENTS

*Dental Associations are Invited to use this Department Freely for
Announcements of Meetings.*

ONTARIO DENTAL ASSOCIATION AND CANADIAN DENTAL ASSOCIATION—At
Toronto, May 16, 17, 18, 19, 1927.
WESTERN DENTAL SOCIETY OF WESTERN CANADA—Edmonton, Alta., May 25, 26, 27, 1927.
DETROIT AMERICAN DENTAL ASSOCIATION—Detroit, Mich., October 24, 25, 26, 27, 28, 1927.

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*Oral Health will be Pleased to Receive Additions or Corrections that Directory
of Names May be Kept as Accurate as Possible*

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Vol. 16

TORONTO, NOVEMBER, 1926

No. 11

EDITORIAL

Ontario Dental Health Day

N this issue we publish an article by Dr. R. J. Reade, giving a fairly complete report of the Ontario Dental Health Day, which was held on the twentieth of October last. We have devoted considerable space to this subject, because we believe it will prove of great interest to members of the profession and health workers throughout Canada, as well as other countries, including Great Britain and United States.

So far as we are able to learn, there are nine States or Provinces in the United States and Canada that have appointed a Director of Dental Services. Where these appointments have been made, almost in every case the appointee is an accredited and responsible officer of the Department of Health.

The keynote of the movement in Ontario is that of co-operation, and this has been just as true within the Department of Health as without. Every officer of the Department, from the Minister and Deputy Min-

ister down to the last member of the Medical and Nursing Services, gave the most friendly co-operation, because of the attitude of the Department that Dental Service is an integral and important part of the health service of the Province. And the Dental Service has also made its contribution to the other Services of the Department and has cordially co-operated. This same spirit of co-operation extended to the profession itself, and even to the public generally, who everywhere evinced a sympathetic interest in the activities of the day.

The fact that all the Service Clubs, including Rotary, Kiwanis, and similar organizations, gave enthusiastic support, indicates clearly the general attitude of the public towards the movement.

Health and education are closely linked together, and one of the most encouraging features of Dental Health Day was the cordial official co-operation between the Provincial Department of Education and the Department of Health. The interest in the work was not confined to Department officers, but included inspectors, teachers and members of the Boards of Education, with the result that practically every school child in the Province had an oral hygiene lesson presented.

Read More Books



THE Dental Profession is rapidly becoming a reading profession. Even as recently as a decade ago, it was frequently stated as a truism that "the members of the Dental Profession do not read". This situation has greatly changed, though there undoubtedly is room for further improvement, and book-sellers to-day look upon dentists as prospective and generous book buyers.

The modern practice of dentistry demands a well educated, well read and cultured practitioner, and every member of the Profession is urged to read good literature, both dental and classical, that better service may be rendered and the old tradition that young graduates might put away their books forever be relegated to the discard.

Obituary

DR. J. F. SIMPSON.



WE regret to report the sudden death of Dr. J. F. Simpson, of Trenton, on Tuesday, November 9th, 1926, while on a hunting trip some seventy miles north of his home. The deceased was 62 years of age and had lived in Trenton all his life, practising dentistry for the past forty years. He left Trenton

on a week-end trip apparently in good health, and, from the meagre information available, was suddenly seized in the bush. He is survived by his widow, one son and two daughters, besides one brother and one sister, both of Trenton.

* * *

THOMAS B. JONES



THE LATE "TOM" JONES.

THE death of Thomas B. Jones on Saturday, October 23rd, 1926, who since 1894 had been connected with the old School of Dentistry of the Royal College of Dental Surgeons of Ontario, has removed a figure which was both well known and picturesque to students and graduates of that institution. He will be mourned by members of the R.C.D.S. wherever graduates of the old school have gone.

Mr. Jones, or "Tom," as he was called by those among whom he worked, was born of Irish-Welsh parentage in Milton, Ontario, on February 20th, 1859. Following in his father's footsteps he took up cabinet making, and in that capacity first became connected with the School of Dentistry when remodeling the old school at 13 Louisa Street, Toronto. Later, in 1896, when the school moved to the site now occupied by the General Hospital on College Street, he helped with the inside furnishings of the building, and became caretaker of the College.

When, in 1909, the R.C.D.S. was moved to its present location at 240 College Street, he moved with it and had a share in helping with its furnishings. After things became settled in the new location the first real opportunity for a well-earned holiday came across his path. On being granted leave of absence, he took advantage of the opportunity to go overseas to the British Isles in 1910, with Sir Henry Pellatt's famous crack Canadian Regiment, as a bandsman in the Queen's Own Rifles Band, of which he had been a member for over twenty years.

When the School of Dentistry of the R.C.D.S. became the Faculty

of Dentistry of the University of Toronto, Mr. Jones was appointed to the permanent staff as engineer of the Dental Building. Failing health, however, soon bade him retire, and the University, in view of his many years of service, treated him as though he had been an employee from the time he first served in the Dental College, granting him a suitable retiring allowance.

The late Mr. Jones was an outstanding figure in the musical sphere of Toronto. He was considered the best Tuba player in the city, if not in Canada, and was a member of the Philharmonic Society of Toronto for the last two decades; was a member of the Executive Board of the Toronto Musical Protective Association, of which body he was President during 1906-07; and played with the Symphony Orchestra for twelve years.

Besides his connections in the musical world, Mr. Jones carried a wholesome interest in activities pertaining to human welfare. Love of animals was one of his attributes, he being an active member of the Toronto Humane Society for over twenty-five years.

The University of Toronto has made a grant of \$1,600 to Mrs. Jones in lieu of the superannuation allowance that "Tom" had received since his retirement.

* * *

DR. AND MRS. A. L. CLARK AND BABY.



As a result of injuries received when the automobile in which they were driving crashed into an engine on a Detroit crossing, on Monday, October 18th, Dr. and Mrs. Alan L. Clark, formerly of Toronto, died in a Detroit hospital. Their infant daughter, Shirley, was also instantly killed.

Dr. Clark, who was a son of Mr. and Mrs. Adam Clark, of 272 Keele St., Toronto, had been practising dentistry in Detroit since his marriage, some years ago, to Miss Lillian Maud Matson. He was a graduate of the University of Toronto and had also received his earlier education in this city.

Dr. Clark is survived by his parents and two brothers, Dr. Harry G. Clark and Dr. Donald C. Clark, both of whom are practising physicians in Detroit and graduates of the University of Toronto. Sincere sympathy is extended to the family.

TO REMOVE PLASTER FROM VULCANITE DENTURES.—In a covered dish, deep enough and wide enough to hold several plates, put strong vinegar, allow the plates to remain therein a few minutes, then remove and brush with a stiff brush and water. If you keep the dish covered, the vinegar can be used over and over again.—*Mary H., Dental Digest.*

Sad is the day for any man when he becomes absolutely satisfied with the life that he is living, the thoughts that he is thinking, and the deeds that he is doing; when there ceases to be forever beating at the doors of his soul a desire to do something larger which he feels and knows he was meant and intended to do.—*Phillips Brooks*.



THE LATE DOCTOR R. B. O'SULLIVAN.

*Formerly Director of Dental Services, Department of Soldiers'
Civil Re-Establishment, Canada.*

ORAL HEALTH

A JOURNAL THAT STANDS FOR THE OUNCE OF
PREVENTION AS WELL AS THE POUND OF CURE



Vol. 16

TORONTO, DECEMBER, 1926

No. 12

Dental Services and National Advancement*

DR. FRED J. CONBOY.

Director of Dental Services, Ontario.

I DO not intend to spend much of the time allotted to me in an endeavour to prove that public dental health will materially assist national advancement. It is not necessary to stress that point before this audience. We all agree with the view expressed by Disraeli when he said that public health is the foundation upon which rests the happiness of the people and the welfare of the state. An ancient philosopher expressed the opinion that the greatness of a city did not depend so much upon the size of its wall as upon the character of its citizens, and the future of Canada will to a large extent be determined by the physical, mental and moral health of its people.

The physical well-being of its citizens should, therefore, be numbered among the nation's greatest assets, and one of the chief tasks which confronts organized society is to protect the public health. In this endeavour the people must look to those who have made a special study of health problems for leadership and guidance, and as dental diseases have a marked influence upon the general health, the Profession of Dentistry is being asked to make its contribution to the physical welfare of the people. It is in the hope of presenting a programme which will meet this demand that I have prepared this short paper.

The first and most important responsibility in regard to both public and personal health rests upon the individual citizen, and a public health service to be permanently efficient must be built upon this principle. The chief duty of the state is to make it possible for the individual to develop his endurance and protect himself against the enemies that would attack and destroy his physical well-being. The public must take advantage of these opportunities. Any public health system which encourages a man

*Read before Canadian Dental Association, Halifax, August, 1926.

to underestimate his responsibility in regard to his own health and the well-being of those depending upon him is to that extent a menace to society. The Dominion, Provincial or Municipal Governments cannot destroy this sense of personal obligation without creating a state of mind which must ultimately result in disaster. Personal responsibility is the foundation upon which modern civilization is built. The community may create a most elaborate and expensive public health system, but if the individual citizens neglect or refuse to co-operate in connection with its activities, it will be of little use. The state may carry a boy through his school life in perfect health and then graduate him into society absolutely unfit to preserve and protect those physical powers which have been built up at considerable cost of time, energy and money. Has organized society then no obligation in regard to health matters? It certainly has.

It is quite evident that no man can reasonably be held responsible for any course of action unless he has a knowledge of the need and the means of accomplishment are placed within his reach. If the people do not realize that dental infection is a menace to health, if they do not know that dental diseases can be prevented, or if they cannot possibly obtain the needed treatment, they cannot be expected to protect themselves. Dental health education must be provided, and dental services made available, before Governments and the Profession of Dentistry can, with a clear conscience, safely leave this matter in the keeping of the individual citizen.

The part which the Profession of Dentistry should accept in the protection of the dental health of all the people is a subject which has caused much discussion and given rise to considerable controversy. There are many who hold that the responsibility of the dentist ends when he renders a modern and efficient service to those who seek, and are able to pay for his help—that he is under no greater obligation to help the indigent by supplying much needed dental treatment than the boot and shoe merchant is to supply footwear or the grocer to supply food. The comparison is rather unfortunate, as the conditions are in many respects quite different.

In the first place, the dentist is a professional man and must place service before reward; he cannot measure up to professional standards and neglect opportunities for service, even though the ordinary fee is not forthcoming. The fact that the boot and shoe merchants or grocers do not supply needy folk with shoes or food, will not relieve him of his responsibility to relieve the sufferings of those who are dentally ill. In the second place, the dentist operates under a license system. Only those who have complied with certain requirements can practise dentistry, and unless they perform the service, the people must go without this treatment so essential to health. At common law any one might practise

medicine or dentistry. To adopt and follow any lawful pursuit not injurious to the community is the fundamental right and privilege of every citizen; all vocations are open to every one on like condition, and a good reason must be advanced before the state is justified in restricting the privilege of practising dentistry to those who have taken a certain course and passed a prescribed examination.

Ordinarily the law cannot interfere with the freedom of private contract. Why should the citizen not be permitted to engage whomsoever he pleases to treat him when he is sick or to relieve him of dental troubles when they assail him? The answer is, the public must protect itself against impostors, charlatans and other incompetent people who would seek, for purely mercenary purposes, to follow this line of work. From the standpoint of public health it is imperative that only those who are properly qualified should be allowed to perform dental operations. Dentistry is thus a calling which reasonably falls within the legislative right of regulation, and the state is justified in insisting that unqualified persons shall not be allowed to practise dentistry. Consequently, arrangements are made so that certain groups of men are entrusted with the dental care of the people, and the Provincial Government gives to them certain rights and privileges and expects them to accept the responsibility for the efficient and thorough performance of the task assigned to them. The protection of dental health has thus been placed in the keeping of the Profession of Dentistry.

Most health authorities will agree that dentistry is essential to physical well-being and should be placed within the reach of all classes of society. The adult and the child, the rich and the poor, the educated and the ignorant, all need the benefits which may be derived from modern dental treatment. Society could provide for such a service by a system of state dentistry, but to do so would remove personal responsibility and promote paternalism, which is a condition to be avoided. Our legislators have, therefore, decided that, for the present at least, they will operate under a license system which gives to members of the Dental Profession sole right to practise dentistry in the different provinces. Every privilege carries with it a corresponding responsibility. There must be two parts to every contract, and consequently Dentistry must, under reasonable conditions, accept responsibility for the dental health of the people. A dentist, or number of dentists, in any community are in duty bound to take an interest in the public health, and use every available means to educate the people in regard to oral hygiene and encourage them and lend assistance to every movement which, under proper conditions, will make dental treatment available to the people. The modern dentist is a public health worker and his influence must go beyond the confines of his regular practice.

The graduate in dentistry who takes no part in connection with dental

health education, and does nothing to assist in providing treatment for those who cannot pay regular fees, is living far below his possibilities as a professional man. No government would be justified in allowing a system to continue which deprived a large proportion of the population of a service essential to health and happiness. And if at any time the members of the Profession of Dentistry take advantage of the license system in order to enrich themselves at the expense of the public, society will demand and will in all probability be given some form of state dentistry. Every citizen who is temperate, industrious and thrifty, has a right to expect that he and those dependent upon him will be able to receive, at a reasonable cost, those things which are essential to their physical well-being. And it is the duty of the Profession of Dentistry to take a leading part in the advancement of any movement which will make this possible. The general public will gladly accept such leadership, because they realize that the dentists are by special training qualified to advise. But we must show evidence of the fact that we are altruistic, public-spirited and measure up to the standards of a true profession.

The Profession of Dentistry cannot, however, be expected to carry the full burden. It should lead the way, it should impress upon the different governments the necessity for action and do everything possible to encourage them to do their duty in this regard. The men and women who conduct our public business are not in possession of the knowledge which we have, and, consequently, they are not impressed with the importance of providing the services which we regard as so essential to the public welfare. They must be educated, they must be made to realize that the physical well-being of the people is the most important matter that they are called upon to consider, and that mouth conditions do, to a large extent, determine the general health. Organized society, as represented by governments, have a responsibility in this regard, and the extent of their obligation should be brought to their attention in a most convincing manner. Now what should our representatives in Parliament and Council be expected to do? The British North America Act places health legislation and administration under the control of the Provincial Governments, and any interference on the part of the Dominion Government would be considered as an invasion of provincial rights. Nevertheless, the Dominion Government can, without fear of criticism, make provision for the dental care of immigrants and prepare and distribute dental health literature. It also has supervision over the dental services in the institutions under its control, but dental health work generally must be done under the direction of the provincial governments.

Each province has its own Health Act, and consequently, while they all agree on certain principles, they differ in regard to the scope of the work to be undertaken. The fact that oral hygiene should be taught

will be admitted by all provincial health authorities, but the question of the amount of support which should be given to encourage the establishment of public clinics will show great difference of opinion. Speaking generally, the work of a provincial dental department should be educational. It should impress upon the individual citizen the value of oral hygiene and dental treatment as a general health measure, and also demonstrate to municipalities the advantages of public dental clinics. It should take an interest in the dental health of the workers and encourage industries to make it easy for their employees to protect themselves against harmful results of dental diseases. It is the duty of such a department to see that as far as possible dental services are made available in all parts of the province and that all those who are under government care receive proper treatment. Municipalities, industries, hospitals and the public generally can reasonably expect the department to supply dental health information and assistance in the organization of clinics, and to take a live interest in every movement or activity which will improve the public dental health.

The burden of organizing and maintaining clinics rests upon the municipality. It is obviously impossible for the province to undertake this task; the government may give financial assistance by way of grants, but the actual management of these services should be undertaken by the Board of Education, or Board of Health, and the funds raised by direct taxation in a manner similar to school or public health maintenance. The scope of the service to be supplied by public clinics is a matter upon which there is a difference of opinion, but the majority of those interested in the work agree that there should be as little interference with the resident dentists as possible. A service which provides treatment for those who cannot afford to pay regular fees is all the average municipality should be expected to maintain, and the remainder of the population will be better under the care of a family dentist.

In conclusion, I would like to stress the importance of this and every other dental association impressing upon its members the necessity of providing a full dental service for all members of the family. Our Canadian citizens, and especially the children, are suffering because many dentists refuse to treat deciduous teeth or to attempt even simple cases in orthodontia. The difficulty and even impossibility of securing services of this kind in a country well supplied with dentists is no credit to the Profession. Public Dental Services or the efforts of specialists, efficient as they are, will not meet the need; the family dentist must be qualified and willing to practise his profession in all its branches, and the work done in clinics and by specialists must supplement rather than take the place of his efforts. Dentistry enjoys a great opportunity for useful service and the Profession is making a praiseworthy effort to measure up to its privileges.

A Consideration of Cast Gold Inlays and Restorations*

WILLIAM DWIGHT TRACY, D.D.S., F.A.C.D.



HIS subject has been before the dental profession for so many years that it may be considered somewhat hackneyed, but I notice, however, that it is still a very vital topic of discussion at practically every dental convention.

Before proceeding with the subject matter of this paper, I cannot refrain from dwelling a few moments upon the importance of the gold casting process as applied to modern dentistry.

Think what this process has meant to dentistry and to humanity. Consider not only how it has been modified, but how it has actually revolutionized much of our procedure in both the operative and prosthetic fields of our work.

This procedure must ever be associated with the name of Wm. H. Taggart, of Chicago,, through whose inventive genius the method of using the disappearing wax model in casting gold under pressure was made applicable and useful in dentistry.

It was only after years of ceaseless toil and hundreds of scientific experiments that Taggart finally introduced his method of casting gold inlays, and demonstrated his process before the New York Odontological Society in January, 1907.

Whatever the circumstances following the introduction of this process may have been, I am impressed with the fact that the profession will always be under obligation to Dr. Taggart.

The title of this paper, "Cast Gold Inlays and Restorations," should perhaps be explained. The term *inlay* is universally used and well understood, but the term *restoration*, as used here, applies to any casting for an individual tooth which involves the replacement of one or more cusps in order to reproduce the anatomical contour and function of the tooth.

The application of gold casting to the filling and restoration of defective teeth is more widely useful than any other one method at our disposal, its most serious limitation being based upon the unsightliness of gold when used in those parts of the oral cavity which expose it to view.

As a means of protecting, preserving and safeguarding the welfare and integrity of defective teeth, gold inlays and restorations have no superior.

As a means of reproducing contour, contact, and that minute ana-

*Read before Canadian Dental Association, Halifax, August, 1926.

tomical detail which is so closely related to restored function, they have, in my opinion, no equal.

My advocacy of this almost universal use of gold inlays in all compound cavities in the bicusps and molars you will please not regard as an attack upon the use of amalgam, for it is not so intended.

I grant to no one a greater appreciation of the real merits and true virtues of amalgam as a filling material, and perhaps no one deplores more than I the abuses to which that material is constantly submitted.

I quite understand that all patients, because of economic conditions, cannot have gold used in taking care of their dental needs, but when there is no economic bar to its use, I have the conviction that the gold inlay in the types of cavities mentioned above, and when properly made and inserted, is the best type of reparative dentistry we have to offer.

Gold casting was introduced to us almost twenty years ago, but eight years prior to that we were making the so-called two-piece gold inlay by the indirect method, using an indifferent amalgam die or model of the cavity, on which the inner shell of 30 gauge, 24-karat gold was swaged. The contour of lost structure was then built in with hard wax, a Melottes metal die was made and an inner shell of 22-karat gold was shaped up, and the seam was sweated together with 22-karat solder, thus completing the inlay. In trimming, a little feather of the pure gold was left available for burnishing and finishing down to the enamel margins.

I have the pleasure of seeing occasionally inlays of this type that have been in service for twenty-five years and that are still intact.

Now if inlays made by this crude method have been useful, how much more safe and secure must we feel with the perfected inlay made according to present-day methods?

In 1907 those operators who may be spoken of as ultra-conservative made a great hue and cry about wanton sacrifice of tooth structure in the formation of inlay cavities, and prognosticated an epidemic of pulp devitalization following the insertion of gold inlays.

These same men also decried the Black method of extension for prevention, which I feel they but poorly understood, and were ever ready to cast a wet blanket over any new thought or innovation in dental practice. Even though a young recruit in the ranks of practice at that time, I felt like quoting to them that safe and sane old saying: "Be not the first to cast the old aside, nor yet the last by whom the new is tried."

One reason why the epidemic of devitalized pulps did not ensue as prophesied (and it did not) was that cavities prepared to receive inlays were more carefully and thoroughly cleaned out than were the cavities in which large gold foil and amalgam fillings were to be placed.

Furthermore, all careful operators realized the necessity for protecting the pulpal wall of dentine in cavities of deep-seated caries, with a suitable lining of cement, thus safeguarding the pulp from thermal irritation as far as possible.

Dr. Taggart stressed the point of having the gold inlay closely adapted to the dentinal walls throughout its entire surface as being essential to perfect retention and resistance to stress, but from the earliest months of my experience in the making of inlays I was impelled by sense of caution to hollow out the under-side of all large or fairly large inlays, so as to keep the gold away from the pulpal wall at the most critical point. This we did at first with small sharp spool excavators, and then later with the Roach Suction wax carver, and it is routine with me to-day, as you will see illustrated by the models which I hope to show you.

About 1915 some of our excellent practitioners became so enthusiastic about the use of gold inlays and silicate cements that they publicly stated that they had thrown away their gold pluggers, and, as I look back on thirty years of intensive practice, I realize that most all innovations have been subjected to abuse which, in some instances, has brought a beneficent and meritorious method or material into disrepute.

It is true that the introduction of gold casting has steadily decreased the number of good gold foil operators, and this is to be regretted, but my observations lead me to believe that we are now witnessing a renaissance of gold foil operations.

The silicate cement bubble, in my opinion, has burst, and disappointment and disaster have followed in the wake of its indiscriminate use. As a result many members of the profession are awake to the fact that it is better practice to take more time, submit the patient to a little more discomfort and insert gold foil in anterior teeth where not exposed to view, and gold inlays in posterior teeth, than it is to insert silicate fillings which take less time, but which fall so far short of our ideal as to permanence.

The question arises as to the scope of the gold inlay—where it should or should not be used. I would answer that there can be no hard and fast rule concerning this matter, but where conditions are favourable cast gold inlays can be advantageously used from the distal surface of the cuspids to and including the third molars.

I have in my practice many patients with practically all proximal surfaces of bicuspid and molars filled with gold inlays which have given perfect service and in whose mouths no amalgam has yet been used.

I confess I would feel happier, however, if I could say to you that I had the same number of patients in whose bicuspid and molars no

cavities of decay had ever developed; but that is another story—a story which brother Hyatt has told you.

Now as to methods of making gold inlays and restorations, shall we use the direct or the so-called indirect procedure, or the semi-indirect plan? That, of course, is optional, but having faithfully used all available means, I have for many years been committed to the indirect method as producing, by and large, the best results in my hands.

I have no bone to pick with direct method inlay workers, and I take off my hat to the expert who obtains satisfactory results in that way, but there are many operators using that method who could do better work and more of it, with less consumption of their own time and their patients' time, by using the indirect method.

A recital of the technical details of the steps taken at the chair in making an indirect inlay is too primary to repeat here, but I can without impropriety ask you if you do not think it is easier and better to take a compound impression and a wax bite of the cavity described below, than it would be to struggle with time and circumstances and a nervous patient in an effort to obtain an accurate wax core directly in the cavity?

Take a disto-occlusal cavity on a lower second molar where cervical caries has carried the lower margin under the gum and almost down to the alveolar crest. There we have lack of access, lack of light, the annoyance of a bleeding gum, the flood of saliva, the inconvenience of a restless tongue and the cheek muscles to contend with; but in spite of these factors, an impression and bite, provided the cavity has been properly prepared, can be taken in five minutes' time—the cavity comfortably sealed and the patient promptly dismissed. Can anyone obtain the necessary wax core properly carved and adapted to the cavity margins so as to insure a satisfactory fit in an equally short time?

Granting that the impression was accurately taken, the amalgam die affords us as true a replica of the prepared tooth as modern dental science is able to produce. With this die mounted in a plaster model with occluding teeth we have reproduced conditions as shown in the mouth.

The skilled technician with plenty of time, a wealth of light and having none of the disconcerting factors mentioned in the hypothetical case to contend with, while holding the die conveniently in his hand, can now carve up a wax core for a gold inlay, the perfection of which is limited only by his individual ability and intelligence in handling wax. When cast, the inlay is cleansed, swaged upon the die, and surface dressing is done, after which all final finishing and polishing is completed.

Where the laboratory steps in this technique are carefully carried out, it is possible to obtain inlays that fit their cavities admirably and serve

as a means of gaining what the profession chooses to term a permanent result—the word permanent, however, being used in the relative sense and in contradistinction to an operation avowedly temporary.

Restorations are made in the same way, meeting an infinite variety of conditions in molars and bicuspid.

I will not tire you in an attempt to enumerate the wide range of use to which cast gold restorations may be put, but by way of illustration will mention only two examples:

In the case of lower molars, which have lost the vitality of their pulps after having been involved with caries on the mesial, distal and occlusal surfaces, I have found great satisfaction in constructing restorations which include a substantial projection or finger of gold extending toward the gingiva both buccally and lingually. Such castings not only restore proximal contacts and occlusal function, but safeguard teeth of this class from mesio-distal fracture, because of the staple-like embrace exerted by the buccal and lingual extensions of gold mentioned.

Patients in middle or later life frequently present with the entire buccal cusp and external plate of enamel missing from a superior bicuspid, but with vitality of the pulp unimpaired. In some of these cases a porcelain jacket crown is indicated, but in many of them, by properly shaping the inner cusp and remaining portions of the tooth, a cast gold restoration can be constructed with a little box-shaped depression on the buccal aspect into which a baked porcelain inlay is cemented. This type of restoration gives splendid satisfaction, with practically no display of gold, and still maintains the integrity of the dental pulp.

I shall hope to show in my little table clinic that indirect inlays and restorations can be made to fit natural teeth perforations so accurately that they meet all practical requirements.

Please note that I refrain from saying that they fit *perfectly*.

There are many who herald their operative work as being perfect, but personally I find 100 per cent. perfection in dental operations just a little beyond reach. I never intend, however, to stop reaching for it!

FOR A BLEEDING SOCKET.—I believe that all who do extracting have a case now and then of hæmorrhage. This may occur several hours after extraction, but most of the time careful examination reveals the fact that only one socket is bleeding. However, if more than one, treatment is the same. For several years I have used potassium permanganate crystals powdered very finely. Moisten a pledget of cotton and dip in powdered potassium permanganate and pack in bleeding socket. This stops the hæmorrhage almost at once if rightly applied. I remove the cotton the next day.—*Dental Digest*.

Copper Amalgam as a Root Filling Material*

F. C. HUSBAND, D.D.S., TORONTO.



HE antiseptic properties of copper amalgam have been known and experimentally attested to again and again for many decades. Miller made experiments to determine the antiseptic properties, if any, of filling materials. He not only found that copper amalgam freshly prepared and old fillings had antiseptic properties, but he also found what was fully more significant—that dentine from extracted teeth which had been filled with copper amalgam was not only sterile, but had antiseptic properties also. *Marshall's Text Book of Operative Dentistry*. Simms repeated the experiments of Miller, and found that copper amalgam and oxychloride of zinc had definite antiseptic properties for some distance about them. *Science and Practice of Dental Surgery*—Bennett. Black says: "This amalgam has so many good qualities that many abandon it with much regret. I think it is generally acknowledged that copper amalgam fillings retain good margins, when they are once made perfect, better or more perfectly than any other filling material. Within the limits of its strength it is as rigid as hardened steel. It does not contract, but exhibits very slight expansion on setting." Black believed its inhibition of caries was largely due to its perfect fitting of the cavity walls. *Hodgens' Metallurgy*. Kirk says: "Its preservative qualities render it a valuable constituent in teeth of low grade structure." *Cosmos XXXVII., Page 737*. Dr. Foster Flagg says: "I regard copper as a most valuable constituent of any amalgam." *American System of Dentistry*. Weagent says that copper amalgam acts as a preservative of the dentine by permeating the tubules with an antiseptic solution. *American System of Dentistry*. Fraser repeated the experiments of Miller, Simms, Black, Kirk and others, and found that copper amalgam had antiseptic properties of a very permanent character; and further, that it retained its antiseptic properties after having been transferred into a fresh medium every two weeks for a period of five years. Because of this permanent antiseptic property and the fact that clinical experience over many years had shown that it had no irritating properties in contact with vital tissues, it was suggested "That it might be used with decided advantage where discolouration of the teeth is not a factor, as a temporary filling, or in root canals, in cavities below the gum line, and when it could be covered on the exposed surface by another filling material." *Dominion Dental Journal, January, 1925*.

Dr. Fitch, in the *American System of Dentistry* published 1887,

* Read before The Canadian Dental Association, Halifax, August, 1926.

suggested the use of silver amalgam as a root canal filling in preference to gold foil or cotton wool, which were in common use. He evidently wished to be cautious in the matter, because he says, "The writer does not wish to be understood as recommending it for this purpose, but would suggest some points of comparison."

It is quite apparent from dental literature that filling root canals with either silver or copper amalgam never became a general practice, because no text book mentions it as a method to be followed. Copper amalgam was abandoned as a filling material chiefly because of its discolouration. As Black says, copper amalgam has many desirable properties which should not be lost sight of, and if the technique suggested below is followed, what seemed to be its undesirable properties can be utilized to preserve and save many otherwise doomed teeth and prevent infected areas about the tooth root end.

TECHNIQUE FOR ROOT CANAL FILLING.

Prepare canal as for Coolidge Sectional Method. Reasonable enlargement of canal is necessary with choke bore or shoulder at apical end. This shoulder preparation, as has been pointed out in connection with the Coolidge method for gutta percha, enables the operator to more definitely place the first section of the filling. Reamers in the engine should be used with the greatest care, if at all. Hand reamers are much safer. Choose as large a root canal plugger as will pass to the end of the canal without binding. Dress off the end of this plugger with cuttlefish disk in the engine so that it is flat and at right angles to shaft of plugger.

Bend a shoulder on the plugger so that the shoulder will rest on a given or chosen edge of cavity margin when the point of the plugger is at the end of the canal.

A radiograph of the root with a diagnostic wire in place should first be made to exactly determine the length of the canal—this your guide that the plugger is reaching to the end of the canal and no further.

Mix copper quite smooth by adding or expressing mercury as required. Mix must not be sloppy.

Carry a small piece to the mouth of the canal with pliers or amalgam carrier. Gently guide into the mouth of the canal with suitable plugger or small pledget of cotton in pliers, avoiding any suggestion of packing. Take plugger already selected with shoulder as above described, and, holding the same with a very delicate hold between thumb and finger, pass it through the amalgam and, with one continued motion, right to the end of the canal, or until the shoulder engages the cavity margin at the point selected. Repeat this process several times care-

fully till you observe from the shoulder on the plugger that you have built up the amalgam about 1 mm. at the apical end of the canal.

Gently tamp a few times to adapt the amalgam and condense it. Repeat this process, building up 1 mm. at a time, till the desired amount—3-5 mm.—has been inserted.

Remove surplus amalgam with barbed broach, and fill the remainder of the canal with a combination of oxychloride cement and gutta percha as follows:

Having chosen a suitable gutta percha point—as large a one as will pass freely into the canal—fill the rest of the canal full of a rather soft mix of oxychloride of zinc cement, and press gutta percha point through it to the full depth. Wipe off surplus with hot ball burnisher, and with suitable plugger gently press warmed gutta percha into the cement. This will bring to the surface globules of mercury which have escaped the barbed broach. These should be removed from the tooth.

In order to prevent discolouration of the crown or visible neck of the tooth, the root filling should be removed to a safe depth (4 or 5 mm.) rootwise of the gum margin with a burr in the engine, and the walls of this portion of the canal made perfectly clean. Replace portion of root filling thus removed with oxychloride of zinc cement.

The placing of the gutta percha cone in a portion of the canal, as described, makes it possible to gain access to the canal for the insertion of a dowel—as in the construction of a crown—should that be necessary at a later date.

Radiographs should be taken immediately after the copper amalgam is inserted and before the cement and gutta percha are inserted, to check up the work and to satisfy the operator that it has been placed where he wishes it to be. In the event that he has failed to get it to the end of the canal, it can easily be removed, because it is very slow in setting—taking hours to harden. Even after it is set, it is possible to remove it with a hot probe.

Copper amalgam can be successfully placed in any root canal where gutta percha can be placed, and has a decided advantage over it because of its proven germicidal qualities of a permanent nature.

Should any be pressed beyond the apical opening, it will be found to be non-irritating, except in a mechanical way, on account of pressure. This is only temporary, however.

Copper amalgam has been successfully used for a number of years as a root-end capping following root resection, but it would seem a simpler and much more effective method to fill the apical portion from the coronal end, providing the canal could be opened.

On account of the germicidal influence extending some distance on all sides of copper amalgam, it would seem permissible to place the

amalgam $\frac{1}{2}$ mm. or so short of the apical opening, rather than press it through. Such investigators as Clyde Davis, of Nebraska, have shown, chiefly in devitalization cases, that the peridental membrane closes over the apical opening and even deposits lime salts in the opening, thus effectively sealing it. Any operation, therefore, that would permit of this physiological repair would seem to be acceptable.

The vulnerable portion of a root canal is at the apical end, because of the difficulty of closing the foramen or foramina.

Crosswise of these, the junction of the dentine and cementum is, as it were, a fire wall—impenetrable, and forming a barrier to the ingress or egress of organisms. Therefore, at least one of three things, it would seem, must be accomplished in dealing with these foramina in order to make a root canal operation a success:

1. Induce, if possible, physiological closure of these foramina. (Davis.)

2. Mechanically obliterate (or fill) them.

3. Maintain asepsis of a permanent character in that area without causing irritation to the periapical tissues.

Briefly consider these in order:

1. *Physiological repair.* Copper amalgam placed close to the end of the canal, following careful preparation, will permit and not hinder this repair, because of its germicidal and non-irritating properties.

2. *Mechanical obliteration.* This is well-nigh physically impossible, except in roots with a single foramen. A solution of resin and gutta percha in chloroform cannot be relied on, since the solvent becomes disseminated and leaves but a fraction of the original bulk in the spaces it was supposed to fill. Neither can precipitated silver or any other precipitated material mechanically obliterate. The deposit, at best, is a porous mass.

3. *Maintenance of asepsis.* Since physiological repair is uncertain, as is also mechanical obliteration, various medicated filling materials have been depended on. The main difficulty encountered with these is that they sooner or later lose their antiseptic properties and themselves become infected, together with the surrounding tissues.

Not until Fraser's work in the University of Toronto on "A Study of the Efficiency of Dental Fillings," was the fact demonstrated that of all filling materials copper amalgam alone possessed permanent germicidal value.

This fact, together with the findings of Miller, quoted at the beginning of this paper, viz., that dentine from extracted teeth which had been filled with copper amalgam was not only sterile but had antiseptic properties also, placed copper amalgam in a very favourable light as an ideal material to use in that vulnerable portion of the root canal—the apical end—provided it could be successfully inserted.

It is not only very adaptable physically, and, what is important, impregnates the surrounding tissues with its benign antiseptic properties, making the surrounding dentine thus impregnated actively germicidal, but, above all, it maintains this condition permanently. Nature, then, must be relied on to regenerate the periapical tissues.

Clinical results have amply verified this.

1. Teeth with large areas were kept under treatment as long as 18 months, or until the areas cleared up, then filled, and have remained clear.

2. Teeth with large areas, some with sinuses, were given short treatment during time of canal preparation and cleared up *after* being filled with copper amalgam.

3. Teeth that had remained tender for months under bland medical treatment lost their tenderness in from a few hours to a few days after the insertion of a copper amalgam root filling.

4. Copper amalgam carefully placed over punctures in roots or in the floor of the pulp chamber gives satisfactory results.

Permit me, in closing, to emphasize the necessity for the most painstaking care in the preparation of the canal, in the insertion of the filling, and in checking up your work, as it progresses, with the radiograph.

The French-Canadian Viewpoint on Public Education*

DR. JOS. NOLIN, *Vice-Dean, Faculty of Dentistry, University of Montreal.*



R. CHAIRMAN, Ladies and Gentlemen: In view of the fact that your Association is more directly concerned with public education, you no doubt expect outsiders, when invited to speak before you, to confine their remarks to educational questions of purely general interest. On the other hand, it would come as a surprise, and you might even feel slightly disappointed if a speaker, hailing from one of the French Universities of Canada, did not refer, in his address, to the French-Canadian point of view on matters of education.

To grasp thoroughly this point of view and to get at the underlying causes from which it springs, one must first endeavour to understand the actual French-Canadian system of education, and bear in mind that it is the outgrowth of a long, complicated and laborious process of evolution.

* Read before The Canadian Education Association.

During the early days of French colonization in Canada the Royal Government of the Mother Country paid fair attention to the education of the colonists. The main mission of the religious orders which were successively sent to America was "to educate younger members of the colony, and more particularly the Indian children, in view of transforming the latter into good Christians and good Frenchmen."¹ More than three centuries ago (1616), Brother Pacifique Duplessis was teaching reading and writing to the Indian boys and girls of Three Rivers, while Father Caron was doing likewise in Tadoussac.

Although history does not mention the fact, it is quite probable that the Recollets Fathers, established in Quebec and who in 1619 were numerous enough to found a monastery, also taught school. They may be considered, and more especially so Brothers Duplessis and Caron, as the first school teachers in Canada. In 1632, Father Lejeune, a Jesuit, wrote: "I am now Regent in Canada."² The other day I had a tiny Indian on one side and a little nigger boy on the other, to whom I was teaching the alphabet. After so many years of regency, I had at last returned to the ABC, but with such contentment and satisfaction that I would not have changed my two pupils for the greatest audience in France."³

The first regular school was built in 1637, with about twenty-five pupils and a few Indians. Two years later, Mme. de la Peltrie established, with Mother Marie de l'Incarnation, an Ursulines Convent in Quebec.⁴ In this convent, which is still in existence, many of the first ladies of the land have since received their education. In 1657, Sister Marguerite Bourgeoys made a schoolhouse out of a stable. It was from this humble beginning that arose the Congregation of Notre Dame, which to-day has 165 seminaries spread all over America, and where thousands of Canadian and American women have sought and found knowledge, refinement and culture.

The Quebec Seminary, which was destined in after years to expand and become the nucleus of a great Canadian university,⁵ was founded in 1660,⁶ ninety years before the cession of Canada to Great Britain. A few years after its foundation this seminary opened a college for boys.

At the epoch of the conquest of Canada there were already a seminary and two colleges in Quebec, Ursulines convents in Quebec and Three Rivers, a seminary and two convents in Montreal, a number of schools for boys under the direction of clerical or lay teachers, and

¹ Chauveau.

² Meaning, of course, Regent of his Order.

³ Chauveau

⁴ Garneau.

⁵ L'Université Laval.

⁶ Garneau.

financed either by the Recollets, the Sulpicians, the Jesuits, or the local parish priests.

There is sufficient evidence to prove that the level of public education in New France at that epoch was equal, if not superior, to that of other colonial countries similarly situated and similarly developed. It may be seen that both superior and primary education were fairly provided for, but the latter suffered an eclipse during the years following the cession.

One of the first measures of the new government was to confiscate from the Jesuits and Recollets Fathers most of their properties and buildings, and to forbid them to admit new recruits into their ranks. This automatically closed most of the primary schools. Most educated Frenchmen who had the means to do so had returned to France. Of the educated laity a few professional men and the landed gentry (the seigneurs) alone remained. The rural population (totally French, remember) was scattered over an immense and barely developed territory, with few and slow means of communication. After the disappearance of the clerical teachers, few remained to take their place. For eighty long years primary education remained stagnant in French Canada. Repeated attempts were made, it is true, by the successive colonial governments to organize public schools. Through faulty psychology on their part, all their efforts to capture the good-will and co-operation of the conquered race ended in failure. They persisted in trying to impose English schools, with English teachers, unfamiliar with the language and the customs and the religious beliefs of the country, on communities totally, or almost totally, French.⁷ The fatal result was that the Canadians persisted in keeping their children at home or in sending them to private schools of their own. Scions of a great and glorious race, they unanimously refused to be denationalized.

Racial characteristics cannot be created or destroyed at will by statesmen or politicians; much less can they be made or developed at the beck and call of financiers, however rich and powerful.

It is true that material interests enjoyed in common by groups of people of various origins and different mentality, living together in the same territory and ruled over by the same government, may give birth to unity of purpose akin to real national sentiment. But such unity of purpose, so essential to the stability of a nation, can only become permanent and be changed into real unity when a common feeling of trust in one another between the different groups—a trust founded on justice and equality—has begotten a common sentiment of affection for the same land and of devotion to some common ideal.

It was not before 1832, eighty-two years after the conquest, that

⁷ Garneau.

the French-Canadians were, for the first time, offered grants from the public treasury for use in their own schools. These grants, bristling with unacceptable conditions, were again respectfully declined.

Constant dissensions between successive Executives and the people of the colony at last culminated in the rebellion of 1837 and 1838, which, regretful as it may have been, nevertheless proved a blessing in disguise, since it brought to the people of Canada responsible government and a full measure of British citizenship.

At last in 1846, exactly eighty years ago, the fundamental principle on which the present laws on education are based was voted by Parliament and obtained the sanction of the Sovereign.

Notwithstanding the scarcity of primary schools during the long period of eighty-six years stretching from the conquest to the middle of the last century, it would be wrong to conclude that the French population of Canada suffered at any time from such absolute and stupefying ignorance as then prevailed in some European countries at the same epoch.⁸

In the burgs and villages the local parish priests and the few remaining professional men volunteered as school teachers. "Many Canadian mothers, educated by the good Sisters of Notre Dame or the Ursulines, gave instruction to their sons as well as their daughters, and, in a great many instances, the sons and daughters of their neighbours."⁹ A number of private schools prepared pupils for the secondary and superior education which the two classical colleges, one in Montreal and one in Quebec, supplied. It is even on record that itinerant teachers went from village to village, teaching the children how to read and write.

It would be interesting, if we had the time at our disposal, to study the psychological effect on the French people of Canada of that long, dreary, almost tragic, period of isolation and passive resistance.

The French mind is, and has been for centuries, strongly individualistic, a trait inherited from its Norman and Celtic ancestry. The effect of being thus isolated in small units, having little contact with one another and none at all with the outside world, made the French-Canadian even more self-centred than his forebears. He became more than ever distrustful and intolerant of outside interference in local affairs. We shall see in a few moments how this mental disposition reacted on education.

Even to-day there is no individual in America, or perhaps anywhere else, so impervious to propaganda of any sort as the French-Canadian. He never lived in Missouri, he may not even know that any such place exists or what the joke means about the people who live there; but he

⁸ Chauveau.

⁹ Garneau.

must, nevertheless, be shown the why and wherefore of a story before he believes it. This may come as a surprise to many Anglo-Canadians. Superficial observers and a certain class of politicians have spread the idea, through the English Provinces of Canada, that the French-Canadian is a tame, lamb-like individual, easily stampeded and fond of being led by the nose. He is represented as an ignorant, placid, hero-worshipping person, with no will or opinions of his own, easily led towards any more or less definite goal by the first clever leader who happens to come along. Impartial students of Canadian psychology will bear me out when I say that nothing is further from the truth.

Consistently patriarchal by temperament and tradition, the French-Canadian is exceedingly jealous of his parental authority, and wary of all rapid or radical changes which might infringe on it. This made it in bygone years, and still makes it to-day, undesirable and impolitic to force on him revolutionary or experimental changes in matters pertaining to parental authority (such as education, for instance) until he is convinced that such modifications are both practical and beneficial.

Other communities which have grown within the life of a generation, from a sparse scattering of settlers, drawn from the four corners of the world, to a state of near nationhood, may dare to experiment, if they feel so disposed, on the plastic mind of their youth, without fear of very serious after-effects if a mistake is made or a faulty system adopted. The men who direct their destinies are mostly, like the rest of the community, new-comers in a new land. They have vacant lots to build upon, and new material to build with. They have no moss-covered walls to tear down or to alter, no invested capital (intellectual or material) to conserve, no relics of a hallowed past to respect. Their fancy is free to wander through the gamut of intellectual architecture from the bungalow to the palace and back from the grain elevator to the log cabin, without fear of throwing the sacreligious shadow of a clumsy skyscraper on some picturesque and memory-laden little church around the corner, where generations have prayed, have been united in wedlock, and have been buried.

The same conditions do not hold good for a people who have lived together on the same land for three centuries, and who have evolved, by natural increase, from a handful of inhabitants to a steadily growing and homogeneous community of three and a half millions.

Those in charge of the reorganization of primary education in French-Canada in 1846, when the French-Canadians were at last granted the privilege of administering their own interior affairs, knew the characteristics and peculiarities of their people. They were well aware that they would not stand for wholesale and sudden changes in educational matters.

"New republics," says Emerson in his *Essay on Politics*, "abound in young civilians who believe that laws make the city, that grave modifications of policy and modes of living, that commerce and education, and religion, may be voted in or out; and that any measure may be imposed on a people if only you can get sufficient voices to make it a law. But the wise know that foolish or hasty law is a rope of sand which perishes in the twisting, that the State must follow and not lead the character and the progress of the citizens." (Emerson, *Harvard Classics*, vol. 5, p. 249.)

The system conceived and adopted in 1848, and gradually modified and improved in after years, still lives to-day. It provides for free education, but does not impose it on the public. Municipalities are given power to tax themselves for education, and government grants are proportioned to such self-imposed taxation. Not only is the Protestant minority in Quebec left free to administer its own schools in its own way and in its own language, but provision is made for English-speaking Catholics who have schools of their own. This liberty of action goes further. In advanced education each institution is free to draw its own programmes and to execute them in its own way. Fervent partisans of standardization may throw up their hands at the above assertion and pity, from the bottom of their kind hearts, a people who are the victims of such a system. In practice we have found that it is not as impractical as it may seem. Programmes have gradually become more and more similar, at least on essential points, and we find that the boys who enter our universities are, on the whole, practically similar in knowledge, intellectual development and power of assimilation.

I do not claim that the Quebec system is perfect. Those in our Province who are in charge of educational matters realize its faults and drawbacks. But they also realize that an educational system is a delicate plant, which artificial or intensive growth is apt to weaken and distort. At all events, the results obtained to date by this system, both as to the proportion of children and youths who seek their education, and as to the intellectual level of those among them who follow up their studies in our colleges and universities, can compare with those obtained in other parts of America.

If you consult Dominion statistics on education (*Canada Year Book*, 1924), you will find that, roughly speaking, 570,000 pupils attended the different schools of all kinds in Quebec during the school year 1921-22. I know that comparisons are odious and more than often inconclusive, still they help the mind to understand and to establish values and facts. The province in Canada closest to Quebec in population is your own beautiful and progressive Province of Ontario. Now if you compare the population of Ontario and the population of

Quebec, keeping, with the *Dominion Year Book*, Ontario one year in advance as to date, we find the total population of Ontario to be one-fifth superior to that of Quebec, while the difference in school attendance is practically the same. The total number of teachers, according to the same authority and for the same years, viz., 1923 for Ontario and 1922 for Quebec, were: Ontario, 16,615; Quebec, 17,727. Number of schoolhouses: Ontario, 7,252; Quebec, 7,694. Average daily attendance of pupils: Quebec, 421,000; Ontario, 470,000. Percentage of daily attendance: Quebec, 79.4; Ontario, 71.8. Someone has said that statistics were invented to mislead the public, and that figures can be made to say whatever one wishes them to say. Those I give you tend to show, at all events, that the French-Canadian system of *voluntary* education, without fines imposed on parents who keep their children at home, or truant officers to terrorize wicked boys who disturb the peaceful service of the swimming pool during school hours, has given, during the comparatively short period of its existence, results that do not suffer by comparison with others.

If I were to add that the two French Universities of Quebec are attended every year by 8,000 students, and that the classical colleges have 10,000 high school and undergraduate pupils; that hundreds of children among the well-to-do classes attend private schools in preference to the free public schools, and are not included in the official statistics; I cannot be taxed with exaggerating when I say that Quebec has no reason to be ashamed of her present status in matters of education. Why, in the city of Montreal, at this moment, the Catholic School Commission is unable to build schools fast enough to keep abreast of the number of applicants. I am told by the secretary of the Commission that 5,000 pupils are, this very winter, attending school in rented quarters—stores, unoccupied warehouses, etc.—while waiting for new schools that are being built. This Commission has already 200 large and modern schoolhouses, and is building many new ones every year.

Such are the historical reasons that have led to our present opinions on education. Allow me to expose them to you in few and simple words.

We believe that education should be adapted to the mentality, the creed, and the language of each community. We are opposed to compulsory education and to intensive standardization. We agree with Professor Stephen Leacock, of McGill University, when he says: "There is a tendency nowadays to reduce everything to a standard or a pattern. In the industrial world this is admirable. The standardization of a Ford car is excellent. But the standardization of the brain is dangerous."

Furthermore, we are sincerely convinced that any man or woman, to be really well educated, should know at least two modern languages—his own, the maternal one, in which he should be thoroughly proficient; and a second one, that he should know sufficiently at least for ordinary intercourse, and also to be able to appreciate the beauties of its literature. To attain this result, we assert that the child should receive his education *in his own language*, and be taught his second in his early youth.¹⁰ Considering the actual status of the Canadian nation, we are of the firm opinion that English and French should be the two languages taught to all Canadian children.

I have given you this, our viewpoint, in all sincerity, truthfulness and loyalty. To make it clear to your minds, I have endeavoured to describe the channels through which it came to us and the fundamental causes which gave birth to it.

We believe in unity, national unity; we desire it with all our hearts, with all our souls. But we believe in a unity born of equality in citizenship, of freedom of opinion, of language and of creed.

You, my hearers, and I, your guest, may differ in race, in language and in religion, yet we may peacefully discuss together questions of common interest; we may do so in all frankness without throwing stones or making faces at one another.

It would be foolish on my part to try to convince you that the language I have learned at my mother's knee, and which has been transmitted to me through generations of ancestors, beautiful, harmonious, clear and logical though it be, is the only language that should be spoken on earth, or that you should forsake your own to speak mine and mine only. It would be preposterous, because I hold opinions on this or that subject, to tell you that your opinions on the same subjects are necessarily foolish, and that you have no right to hold them because they differ from mine; and because you worship your God, who is also my God, at a different altar than mine, I would be and feel odious if—sacred as I hold my own faith and had I the power to do so—I endeavoured to force it upon your souls against the dictates of your conscience.

No, ladies and gentlemen, unity, although not incompatible with it, is not necessarily the result of uniformity and standardization. It is born of tolerance, of love and friendship, and admiration and good-will.

We have, right here in Canada, the makings of a great and glorious people, the two main elements of which descend from the two proudest

¹⁰ This does not apply to individual emigrants or groups of emigrants from foreign countries, but only to the two original ethnical groups of Canadians. New emigrants who have voluntarily left their own country to seek a home in Canada cannot logically claim the same rights as the original settlers in this respect.

and most cultured races in the world. They have, both, racial characteristics which have been distilled into them through the souls of a galaxy of forefathers. These characteristics do not, and ought not, to antagonize each other, nor ought the two elements to lose any of their precious individual qualities to become a racial alloy inferior to either of its components.

The more precious a metal, the higher its fusing point, the more refractory it is to alloying with another metal as precious as itself. But if the heat of the furnace be high enough, and if there be sufficient fuel to keep it at the same temperature for a sufficient length of time, the nickel and the steel will gradually blend together and form an armour-plate which no missile on earth can shatter.

Until this ideal moment has arrived, how are we in Canada to achieve national unity? In your hands, teachers of Canada, lies the solution of this perplexing problem. Until we have attained this millennium, it behooves you to instil into the minds of your pupils that spirit of tolerance, that breadth of outlook, which will compel them to appreciate and admire their co-citizens. Teach them that other men and other women, though different in language or religion or customs, are their equals in intelligence, in sincerity, and in devotion to the ideals of their country. Teach them to think kindly of them and to speak kindly of them.

"Kind words," says a writer, "are the music of the world. They have a power which seems to be beyond natural causes, as if they were some angel's song which had lost its way and come on earth, and sang on undyingly, smiting the hearts of men with the sweetest sounds, and printing, for a while, an angel's nature into us."

Many a friendship—long, loyal and self-sacrificing—rested at first on no thicker foundation than a kind word.¹¹ If this be true for individuals, how much more must it be true for groups of men estranged from each other by accidents of birth, language, religion or racial characteristics. The descendants of two proud races are thrown together and destined to live in the same country for decades and centuries to come. "Perhaps each of them regards the other's antecedents with somewhat of distrust; they have possibly been set against each other by the circulation of distorted facts and hasty judgments. They may look on one another as rivals, and the success of one may be considered as incompatible with the success of the other. A few kind words, a charitable and friendly appreciation of the qualities of one by the other, may suffice to set all things straight and to be the commencement of an enduring friendship."

¹¹ A. U. Faber.

Canadian Dental Research Foundation Report*



THE work of the Canadian Dental Research Foundation during the last two years has been more or less curtailed by lack of funds, due to the heavy expenses previously incurred in publishing bulletins and such liabilities standing as debit balance, as shown in the Financial Statement presented to this Association at its 1924 meeting.

However, considerable has been done in the way of distributing bulletins. Over three thousand copies of Bulletin number eight, "Articulation for Partial Dentures with the Snow Apparatus and Wadsworth Incisor Guide," have been distributed free to the dentists of Canada. The work of the Foundation in publishing the Bulletins by Dr. Box has received wonderful recognition from other countries. Requests for copies have come from all parts of the world. Hundreds of Dentists in the United States have written for copies, and over thirty Dental Colleges there are using the Bulletins in teaching the subject of Periodontia, in some cases securing sufficient copies to supply their students. One hundred Bulletins have been sent to Australia, about half this number to England, and copies to South Africa, China, Austria, Germany and Czecho-Slovakia. There have also been a number of requests from publishing houses in England and America for permission to reproduce some of Dr. Box's cuts to illustrate text books on Periodontia.

All these Bulletins to foreign countries were supplied at a small charge to cover cost of printing and mailing, and many times the recipient would add a small contribution as an expression of appreciation. It is interesting to note that three of the subscriptions to the Trust Account during this period have come from outside Canada. Drs. E. Stanley Wallace and L. R. Scholes, of Sydney, Australia, each contributed five pounds; and one from the American Academy of Periodontology for \$150.00, which was voted by that Association as an expression of their appreciation of the research work performed by Dr. H. K. Box and published by the Foundation.

We are pleased to report that the heavy financial obligations incurred two years ago have all been discharged, and the Foundation is now in a position to undertake new work. The executive have been offered a new Bulletin by Dr. Box on Trench Mouth, and another on an interesting phase of Operative Dentistry is being considered. In future, when Bulletins are available, your committee recommends that return post cards be used to notify the Profession in Canada, and copies of

* Read before The Canadian Dental Association, Halifax, August, 1926.

Bulletins be sent on request. This will prevent waste and loss in sending Bulletins where they might not be appreciated.

We believe that the time is now opportune for a further appeal to Canadian dentists to support this worthy work, and we would, therefore, respectfully ask this Association to authorize and endorse such an appeal for contributions. In doing so we are not unmindful of the past generosity of the Profession. In addition to the numerous subscriptions from individual dentists, the following contributions would indicate that the different dental organizations throughout the Country have given their approval to the Foundation:

Canadian Dental Association	\$ 200.00
British Columbia College of Dental Surgeons	100.00
British Columbia Dental Association	100.00
Alberta Dental Association	200.00
Calgary Dental Society	50.00
Manitoba Dental Association	200.00
Ontario Dental Association	1,850.00
Royal College of Dental Surgeons of Ontario (Board) ..	2,000.00
Thunder Bay Dental Association	100.00
College of Dental Surgeons, Quebec	500.00
Study Circle, Montreal	25.00
Nova Scotia Dental Association	150.00
Halifax Dental Society	50.00

However, it is impossible to carry on an extensive programme in dental research with our present income, and an endeavour must be made to build up the trust fund. It is the privilege of any province to assume the responsibilities of the work for the next two years, and the Foundation Directors will be glad to receive such requests at this meeting. If none are forthcoming, the work will be carried on as before, if the Directors so wish.

Respectfully submitted,

R. G. McLEAN, *President.*

E. A. GRANT, *Secretary-Treas.*

CANADIAN DENTAL RESEARCH FOUNDATION—FINANCIAL STATEMENT.

Period May 25th, 1924, to June 30th, 1926.

August 3rd, 1926.

Canadian Dental Research Foundation,

86 Bloor Street West, Toronto, Ontario.

Dear Sirs,—We have completed our audit of the books and accounts of the Canadian Dental Research Foundation for the period from May 25th, 1924, to June 30th, 1926, and submit herewith our report, together with the following statements and schedules:—Statement of Assets and Liabilities, Statement of Receipts and Disbursements, Trust Account; Statement of Receipts and Disbursements, Current Account; Detailed list of Subscriptions.

All our requirements, as auditors, have been complied with, and we certify that, in our opinion, the accompanying Statement of Assets and Liabilities correctly sets forth the state of affairs of the Foundation, as shown by the records, as of June 30th, 1926.

Respectfully submitted,

(Signed) Thorne, Mulholland, Howson and McPherson,
Chartered Accountants, Auditors.

CANADIAN DENTAL RESEARCH FOUNDATION.—STATEMENT OF
ASSETS AND LIABILITIES.

June 30th, 1926.

Assets.

Current Account—	
Cash in Bank	\$ 141.00
Ontario Press Limited	58.62
Accrued Interest on Investments	208.53
Accrued Interest on Uninvested Funds	4.24
	\$ 412.39
Trust Fund—	
Cash in Trust Company	453.24
Unpaid subscriptions	1,570.00
Investments at cost (Par value \$13,350)	13,366.10
	15,389.34
	\$15,801.73

Liabilities.

Current Account—	
Accrued Expenses	\$ 65.10
Surplus	347.29
	\$ 412.39
Trust Account—	
Surplus	15,389.34
	\$15,801.73

CANADIAN DENTAL RESEARCH FOUNDATION.—STATEMENT OF
RECEIPTS AND DISBURSEMENTS—TRUST ACCOUNT

From May 25th, 1924, to June 30th, 1926.

Receipts.

Balance May 25th, 1924	\$ 217.00
Subscriptions	1,213.59
Interest on Investments	1,478.61
Interest on Trust Funds: Less Bank Charges	17.30
Adjustment from Current Account	21.00
	\$2,947.90

Disbursements.

Investments—	
City of Toronto 5%, 1941 (Par value \$1,000.00)	\$ 998.75
Interest remitted to Sec.-Treas., Less Bank Charges..	1,495.91
	\$2,494.66
Cash in Trust Company, June 30th, 1926	453.24
	\$2,947.90

CANADIAN DENTAL RESEARCH FOUNDATION.—STATEMENT OF
RECEIPTS AND DISBURSEMENTS—CURRENT ACCOUNT.

From May 25th, 1924, to June 30th, 1926.

Receipts.

Cash in Bank, May 25th, 1924	\$ 382.30
Grant from Board of Directors, R.C.D.S.	500.00
Grant from Board of Directors, O.D.A.	500.00
Contributions from Bulletins and Pamphlets	678.99
Interest on Investments held by Trust Company	1,478.61
Interest on Trust Funds, Less Bank Charges	17.30
Bank Loans	565.00
	\$4,122.20

Disbursements.

Stationery, Bulletins, Pamphlets and Postage	\$3,268.47
National Trust Co., Limited, Charges	32.41
Bank Loans Repaid	365.00
Auditing Accounts, 1923-24	25.00
Salary, Stenographer	60.00
Interest and Exchange	26.32
General Expense	4.00
Cash in Bank, June 30th, 1926	\$3,981.20
	141.00
	\$4,122.20

CANADIAN DENTAL RESEARCH FOUNDATION.—DETAILED LIST OF SUBSCRIPTIONS.

From May 25th, 1924, to June 30th, 1926.

American Academy of Periodontology	\$ 150.00
Essenberg, Dr. M. J.	10.05
Ontario Dental Association	1,000.00
Scholes, Dr., £5	24.27
Thompson, Dr. F. L.	5.00
Wallace, Dr. E. S., £5	24.27
Total Subscriptions for this period	\$ 1,213.59
Total Subscriptions to May 24th, 1924	14,194.51
Total Subscriptions to date	\$15,408.10
Less Unpaid Subscriptions	1,570.00
Subscriptions received	\$13,838.10

Dominion Dental Council Examination Results

The following have passed Dominion Dental Council examinations in the following subjects:

- Operative Dentistry:**—Belden, T. N.; Bagnall, J. S.; Wilkes, H. F. D.
- Prosthetic Dentistry:**—Belden, T. N.; Wilkes, H. F. D.
- Anæsthetics:**—Belden, T. N.; Corlett, H. M.; Wilkes, H. F. D.
- Materia Medica and Therapeutics:**—Corlett, H. M.; Eaton, H. M.; Findlar, C. A.; Haverstock, A. B.; Israel, S. G.; Moffatt, H. F.; McDougall, D. A. R.; Wilkes, H. F. D.
- Medicine and Surgery:**—Belden, T. N.; Bagnall, J. S.; Wilkes, H. F. D.
- Pathology and Bacteriology:**—Belden, T. N.; Colbeck, S. M.; Eaton, H. M.; Haverstock, A. B.; Israel, S. G.; Wilkes, H. F. D.
- Jurisprudence and Ethics:**—Belden, T. N.; Wilkes, H. F. D.
- Anatomy:**—Dougall, J. H.; Godsoe, W. H.; Gruer, W. P.; Jackson, W. J. S.; Lesik, J. I.; Phin, A. W.; Porter, C. A.; Tupper, J. A.; Washington, L. A.; Wilkes, H. F. D.
- Physiology and Histology:**—Godsoe, W. H.; Tupper, J. A.; Washington, L. A.; Wilkes, H. F. D.
- Physiology (only):**—Findlar, C. A.; Godsoe, W. H.; McDougall, D. A. R.; Tupper, J. A.; Washington, L. A.; Wilkes, H. F. D.
- Histology (only):**—Fraser, F. A.; Gruer, W. P.; Jackson, W. J. S.; Somerville, A. A.
- Physics and Chemistry and Metallurgy:**—Davies, O. J.; Findlar, C. A.; Corlett, H. M.; Lesik, J. I.; Moffatt, H. F.; McDougall, D. A. R.; Wilkes, H. F. D.

Report of the Dominion Dental Council*



THE Dominion Dental Council, in submitting its report to the Canadian Dental Association, has pleasure in advising you that our Council has placed itself on record as being in favour of incorporation. With that end in view we feel that, as there is a lack of knowledge on the part of a large membership in the Profession regarding the aims and activities of the Council, a programme of propaganda must be instituted, and in order that the best results may be obtained we desire that your body shall nominate a committee of three of your members to act with a committee of the Dominion Dental Council to spread the gospel of the Dominion Dental Council among the members of the Profession through the Dominion, more especially among the members in Quebec and British Columbia, who are at the present time not as well informed as they otherwise doubtless would be, by reason of the fact that these two provinces are not at the present time represented on our Council.

We trust that you will select three earnest, sympathetic members who will convey our message of good-will and friendliness. The wording of our resolution is as follows:

"Moved by Dr. John W. Clay, seconded by Dr. J. M. Magee, that a committee from this Council be appointed, which is hereby empowered—

- "(a) To negotiate with representatives from the Provinces of Quebec and British Columbia, with a view to considering the possibility of their being represented on the D.D.C., and, if found favourable, to carry on negotiations leading to that end.
- "(b) To draw up a plan of Federal Incorporation, with provisions similar to those embodied in the Medical Professions Act.
- "(c) To carry on a campaign of education as to the value of the Dominion Dental Council in Canada,
- "(d) To prepare a recommendation of a course of action for presentation to the D.D.C.
- "(e) To expend such monies as may be necessary for the above objects, subject to the consent from time to time of the Executive of the D.D.C."

Incorporation, we feel, is one step toward the goal of unification of the laws of our various provinces, with the ultimate object of secur-

* Read before The Canadian Dental Association, Halifax, August, 1926.

ing Federal legislation creating a licensing body whose certificate will be valid for registration in any part of the Dominion of Canada.

We intend to furnish, in both English and French, a synopsis of all our proceedings, so that everyone will be informed.

We have slightly rearranged our examination programme, strengthening where it was required to keep our standards slightly in advance of any individual provincial standard, and especially we have stiffened the practical portion.

One item that will be of decided value to the secretaries of the various provinces who up to the present time have been troubled by holders of the Dominion Dental Council Certificate who, through ignorance of its actual value and purport, have entered upon practice without the Secretary's knowledge, is the following statement, which in future the holders of our Certificate will be required to sign prior to receiving said Certificate: "I hereby promise that before opening a dental office and beginning practice in any province by virtue of my Dominion Dental Council Certificate, I will register said Certificate with the Registrar of the Dental Board of the province in which I am opening an office. I understand that disregard of this provision renders me liable to prosecution for illegal practice."

During the year just past the Council has donated six hundred dollars for research work, dividing it equally between Dalhousie University and the University of Toronto. Should the funds permit, additional amounts will be donated, the Council having decided that they should support research work as much as possible.

Nova Scotia has, during the past few months, requested that the D.D.C. allow their Examining Board to act as Examiners for Nova Scotia. The Council has agreed to do this.

There are many evidences that the D.D.C. has been able to exert a marked influence in quarters where that influence was needed in lessening unethical practice and in improving provincial standards. A much more harmonious standard now exists than did exist prior to the establishment of the D.D.C. This work it is proposed to continue.

Submitted for your consideration:

W. M. McGUIRE,
President, Dominion Dental Council of Canada.

TO REMOVE MERCURY FROM METAL.—You can drive mercury off from metal with heat, as it volatilizes at a lower temperature than any other metal. However, this should be done either in the retort, where the mercury can be precipitated and reclaimed, or in the open air, as the fumes are very poisonous, and, of course, would contaminate any noble metal which you might have near it.—*Dental Digest.*

An Unestablished Contact

NEWTON G. THOMAS, D.D.S., CHICAGO.



LIKE school, like graduate, is a truism that is only slightly debatable. That water does not rise higher than its source is scarcely truer than that graduates do not rise in their thinking and idealism higher than the schools that nurtured them. A school that is devoted to the production of dentists or physicians only can expect only to produce men who will practise merely to make a living. These comments in no way deprecate that major function, but they do emphasize a prevailing condition that is anxiety producing, to say the least.

Alumni organizations of varying degrees of volatility and volubility seem very often to regard their service done when they gather annually, click their steins, hail their Alma Mater, and report students recommended and enrolled or a sum added to the endowment. This, in all its commendability, leaves one gaping disconnection, a pointed question unanswered. But the alumni are not to be censured; they are the products of the schools. The schools, mayhap, should not be censured; they cannot well out-step their own length of leg, and their present day stride perhaps won't permit a better speed.

Ought not every dental office to be an observation centre for the benefit of the public and the profession? Ought it not to be a locus of illumination for both laity and educational centre? The answer need not be written. The explanation might well be. One can readily understand how a dental practice may sag to the level of a mere day's work. If it has no problems, no tests, no observations, no records, no conclusions, it must do so. But given these, with interchange between the office and the college, the headquarters for investigation, what must the results be for both office and school? This: information increased many fold, enrichment and widening of professional knowledge, vitalized teaching, vivified practice.

But this is what does not happen. Here is the gap. At this point alumni and Alma Mater lose contact. The dentist, as a producer, is unknown to the school. What problems he finds or observations he makes seldom find their way to the schools for comparison, co-operation, co-partnership-deduction. The sinister doubt is that the dentist is an observer, the tabulator, the wise deducer that he should be. And equally as dark is the alternative; the school from which he came is probably as little so as he. Like parent, like child, is the similitude here. Thus together the practitioner and school fail to share in what might be a far-reaching benefit.

The dental parent institution is responsible in tremendous measure for the graduate it makes. Not wholly, certainly, but in greatest measure. Its atmosphere has been didactic to the elimination of curiosity and experiment. "I don't know, let us find out," has not yet found great favour in its halls. *Ipse dixit* is the slogan of its pedagogy. Here and there, somewhat exotically, may be found flowering plants of investigation, but only here and there. It follows no programme, is allowed none. Whole departments are devoted to teaching only. Instructors labour the days through and reach the week-ends bedraggled and weary. To the open-mouthed questions of their toil they turn languidly; "the spirit is willing, but the flesh is weak." Out of the teach, teach, teach of the school, comes the toil, toil, toil of the office.

How vital this alumni-collegiate relationship is need not be discussed. That it prevails as described is true. Many teachers, specialists in their fields, aver that they seldom or never receive a request for information or co-operation from alumni. And did they at this moment, what would the result be? These lines deal in futures. This is a vital condition, a vital relationship to which schools and graduates, but schools first, must give thought. Some schools are doing it. One only recently announced a co-operative programme between college laboratory and clinicians' chair that promises advances that should thrill the entire profession. This is the *ne plus ultra* of university accomplishment, of office enlivenment, of professional ascent.—*The Bulletin—University of Illinois*.

The Significance of Long-Standing Inflammation



ANY inflammation which has existed for months is to be treated seriously, says M. F. Engman, M.D., in the course of an article entitled "Oral Focal Infection in Relation to Skin Diseases," published in the *Dental Cosmos*. One of the most terrible things I have seen in my practice, he continues, are these cases of cancer of the mouth. Some of them have been detected by dentists, but most of them have come so late that operation or any remedial agent was absolutely out of the question. These people can be relieved and have their lives prolonged by radium, but after the disease has gone to a certain degree nothing can stop it, because cancer metastases and infiltrates so rapidly that it gets into the glands. I think it would be a good idea for some connected with dental schools to make some arrangement with skin and cancer hospitals to have a certain number of clinics to teach students to recognize the conditions which might arise from chronic inflammation. These conditions arise from badly fitting

dentures, from old snags of teeth, from chronic inflammation deep down in the root; they come sometimes from leukoplakia in the mouth.

LEUKOPLAKIA.

Leukoplakia means merely a white spot, and lots of white spots are not what is classically known as leukoplakia. Leukoplakia is, of course, incipient cancer. Histologically, it shows down to the cutis; it shows an invasion of the epithelium into the cutis. It may go for a long time without infiltrating and causing malignancy. Leukoplakia is supposed to be due to syphilis; the text-books state that the large majority are due to syphilis; but, in our experience, that is not so. In statistics of the Barnard Skin and Cancer Hospital (which are very carefully kept) they run about 30 per cent. in which you get a positive Wassermann with leukoplakia. When we take into consideration any group of people, they will run about 17 per cent. positive Wassermanns. We have tested that, and it has been tested by many others. In definite groups, police probationers run lower than any other groups. I do not know any particular reason why this is so. Cancer runs 17 per cent., and therefore we cannot say that syphilis is the cause of cancer. Leukoplakia runs 30 per cent., but cancer of the mouth does not run any higher than the usual group.

SMOKING A FREQUENT CAUSE.

It is usually due to inflammation; smoking is a frequent cause. It may be due to chewing tobacco where the pack is kept in a corner of the cheek. We have many such cases, just as in the South Sea Islands, where they put the quid of calcium and hasheesh in one side of the cheek. It causes the same irritation that tobacco will. Leukoplakia is nothing but thickened epithelium changing from normal.

TESTING FOR MALIGNANCY.

Lichen planus causes white spots; psoriasis also. You may term these leukoplakias, and if they exist long enough they may go on to malignancy. Therefore, every case should be tried out this way: stop the source of irritation long enough—smoking, tobacco chewing—to afford opportunity to see if there is any change in the white spot. If there is not, it should be destroyed or taken out with the red-hot cautery. The danger of taking it out with a knife is the danger of metastasis, but, when done with the cautery knife, you get clotting and closing of the vessels and there is no danger of metastasis.

I believe every dentist should carefully examine the whole mucous membrane of the mouth, no matter what the patient comes in for, so that all of the mucous membrane may be observed and felt, and thus many lives saved.

Pyorrhoea Alveolaris Investigation

ABSTRACT BY DR. J. STANLEY BAGNALL.

DR. E. H. HEDDEMA, of Amsterdam, in a paper on "The Relation Between Changes in the Gums and the Deeper Portions of the Periodontium, with Particular Reference to Pyorrhoea Alveolaris," in the *Deutsche Monatsschrift für Zahnheilkunde*, of July 15, 1926, gives an extended review of the literature and of his own researches on the problem.

One hundred and fifteen patients were given a clinical examination as to the condition of the gingiva, teeth, tartar formation, occlusion, and method of use of the tooth brush. These patients were largely in hospitals and on 27 postmortems were eventually carried out. In these cases the microscopic examination of the post-mortem material was linked up with the clinical examination.

The object of the investigation was to obtain a better insight into the effect of inflammation of the gums. He is particularly interested in that portion of the gum lying between the alveolar crest and the oral surface of the interdental papillae. Inflammation in a tissue as vascular as the periodontium can make itself felt at a considerable distance from the focus.

The first case is of a woman of 20 years (cause of death, tuberculosis). The teeth were intact and free from caries, and with no tartar except on the distal half of the buccal surface of the left upper first molar. Gums were normal, except for slight inflammation in the neighbourhood of the tartar. The periodontal space of the crest of the alveolar process was here widened to 0.4mm. and the bone destruction was quite marked.

The second case was in a woman of 25, where all of the teeth on the upper left, as well as several others, had been removed. There was extensive caries. Marked tartar deposits were present, with much inflammation, which could be established both clinically and microscopically. There was, however, practically no bone destruction. Teeth, in this case, were removed in a surgical operation (nature and reason for which is not stated).

A number of other cases described, some of which showed marked infiltration, with slight bone lesions; while others with a slight inflammation showed marked bone lesions. A series of cases treated at the same time, in private practice, which showed marked bone lesions, were marked by the presence, on bacteriological examination, of spirochetes and fusiform bacilli. He infers then, since these organisms were not present in the cases which did not show bone lesions, that they were a causal factor in the formation of bone lesions. Where a spirochete infection was pres-

ent, bone lesions resulted much more quickly than in their absence. He refers to the clinical fact that marked inflammation may be present in some cases for years without loosening of the teeth, while in other cases it occurs early.

A bacteriological examination of the first case showed the presence of spirochetes, and he therefore considers it a case of pyorrhœa alveolaris, although no pocket was present. He infers that the rapid clearing up of a case after extraction or surgical obliteration of the pockets is due to the fact that the sheltered locations for these organisms have been removed. He states that the use of salvarsan-glycerine in a strength of 1:10 for several days previous to surgical treatment results in more rapid healing and less post-operative pain.

The author refers to the necessity for clinical, histological, roentgenological and bacteriological examinations in pyorrhœa investigations. States that many factors, as chronic poisoning, such as in mercurial stomatitis; errors of diet; faulty use of the tooth brush and overloading of the teeth; are frequently factors co-operating in commencement of pyorrhœa. Search should, therefore, be made in each case to see whether one or more of these factors are present. It will always be found that there is an accompanying spirochete infection which should be treated.

He states, in conclusion, that if the microscope be used early to determine the presence of spirochete infection, much might be accomplished in the prophylactic treatment of pyorrhœa, because of the fact that treatment with salvarsan-glycerine, 1:10, is very practicable at this stage.

Claimed Damages for Death in Dental Office



MRS. MARY ELLEN FLECKNEY, of Halifax, Nova Scotia, brought suit against Dr. C. D. Desbrisay for \$5,000 damages for the death of her daughter, Louise M. Fleckney, during extraction of her teeth under a general anæsthetic. The anæsthetic was administered by W. E. Daley, M.D.C.M. The case came before Mr. Justice Mellish at the November session of the Supreme Court of Nova Scotia.

The plaintiff claimed the damages on the grounds of loss of the deceased's potential services and earnings. She claimed that death was due to negligence, alleging that:

(a) The deceased was not properly examined by the defendant before the administration of anæsthetic, and the condition of her heart and lungs ascertained;

(b) The defendant did not properly prepare the deceased for anæsthetic, by omitting to see that her garments on neck and chest were so adjusted as to permit of free respiration and proper heart action;

(c) Anæsthetic was not administered with due care as to the concentration of its vapour, on which the rapidity of its narcosis and toxicity, depends, and was not kept below the proper percentage of respired air;

(d) Before and during the administration of anæsthetic there were indications shown by the deceased that the administration and continued administration of the anæsthetic was liable to kill her;

(e) An anæsthetic was not necessary to be administered to the deceased, under the circumstances;

(f) The anæsthetic administered was not the proper or suitable one under the circumstances;

(g) The amount of anæsthetic given and its duration was unreasonable;

(h) The necessary appliances for resuscitation were not ready for immediate use before commencing and during the administration of anæsthetic;

(i) The room or place in which the anæsthetic was administered was not properly ventilated, nor was there in it a proper quantity of fresh air, under the circumstances;

(j) The anæsthetist was not a fit and proper person to administer the same, and was not in a fit or proper condition to administer such anæsthetic.

Corporal Holland, in his evidence, stated that he had been talking with Mrs. Fleckney in the waiting-room office, and that she had told him that her daughter had taken a purgative and no breakfast, and had taken off much of her clothing in preparation for the anæsthetic.

Dr. Debrisay stated that the arrangements for the operation had been made by the brother of the deceased. They had no family physician, and when he suggested Dr. Daley, this was agreed to by the family. Stated that he had heard Miss Fleckney tell the physician that she had not had any breakfast and had also taken a purgative. Dr. Daley took her pulse, sounded her lungs and used a stethoscope. She was laid in the horizontal position, and the room was well ventilated and free from gas. The girl responded well to the anæsthetic and about half her teeth were extracted, when she began to come out. Dr. Daley then switched to ether, which was given in small doses, and she responded, but immediately after passed away without the slightest sound or stir. Every effort was made to resuscitate her, including the use of artificial respiration and adrenalin.

Leo Baxter, D.D.S., who was present during the time of the actual operation, substantiated the evidence given by Dr. Desbrisay.

Drs. Lessel and Muir, anæsthesia specialists, called by the defence, stated that in a case of dental extraction, where as many teeth were to be removed as there were in this case, it shaded into a major surgical

operation. They agreed that chloroform, shifting to ether, were proper anæsthetics under the circumstances.

The jury, after four hours' deliberation, decided that the defendant was not guilty of negligence in the treatment of the patient, which resulted in her death.

(Dr. Daley, the anæsthetist in the case, died before the case came to trial.)

Impression-Taking With Special Reference to Muscle-Trimming*

BY OSWALD SLATER, L.D.S., LEEDS.

N this paper it is not my intention to go through all the details of impression-taking. We can all take impressions, and we all have our own ideas as to the best methods of doing so. It is my intention, therefore, only to bring forward those points the study of which is necessary in order to obtain the most accurate results in the finished denture. I do not intend to raise once more the old controversy of plaster v. compo. It is my opinion that both are equally good when used in those mouths for which they are most suited. The trouble is, in taking impressions, so many operators become biased in the use of one material, and will try no other, and so do not benefit to the extent that they would if they suited their material to the mouth.

Now what is our aim in taking an impression? Is it not just to get a nice sharp impression of the mouth, but to get such an impression that the finished denture will:—

(1) Rest with sufficient steadiness on its supporting base, so that the artificial teeth may be effectively driven into the food during the movements of mastication.

(2) Will maintain its position, at all times, sufficiently to keep the visible teeth immobile; to enable the patient to speak clearly and naturally, and to fit firm enough not to be coughed out.

(3) Will not rub the moving tissues or press too heavily upon, or enclose too tightly, any tissue.

In order to obtain these conditions it is essential to make a proper examination of the mouth, not merely to see what sized tray to use, but to find out what we are up against, and lay our plans accordingly. We must find out whether the mouth is hard or soft, or if it is irregularly hard and soft, note the undercuts, the depth of the sulcus, the resilience

* Paper read at a Meeting of the Yorkshire Branch of the British Dental Association, held at York, on November 1, 1924.

of the tissues, and the strength, position, and attachments of the muscles.

Having found out and noted the peculiarities of the mouth it is then that the operator has to decide how he is to obtain the most useful impression. The chief considerations are, the kind of material to use and the choice of tray.

To take the latter first. The tray required is one that will fit well enough to:—

(1) Compress the soft parts of the gum-base so that a solid support may be ensured.

(2) Avoid distortion of the marginal muscles.

(3) Secure the maximum area of foundation.

It is very seldom that this combination can be obtained in stock trays, although much can be done by padding the tray with wax or compo in order to meet the necessary requirements, or taking a preliminary impression in compo or bees' wax, and using the trimmed impression as a tray. This is often done for final impressions, both in compo and plaster, with quite satisfactory results, but the best plan is to take a preliminary impression with the nearest accurate tray to hand and have a special tray made from the resulting cast. This tray can be made in metal or hardbake, with or without a handle, and should be so constructed that it will meet the requirements of the mouth in question.

Having obtained your tray the next question is the material to use. As my remarks have entirely to do with edentulous cases our choice lies between plaster and compo. They have both their good and their bad points, but I am not going to dwell on this. The thing to consider is the kind and state of the mouth. Is it hard and firm or soft and flabby? Will the tissues be compressed by the denture under biting strain, and do they require compressing to give the most stable denture? Are the tissues so resilient that to compress them will only mislead? Are these bony prominences that form undercuts?—and so on. This we have to find out by our examination. Plaster will not compress the tissues, and will not drag, but break at undercuts. Compo *can* compress and *does* drag, so which are we to use? If the tissues, say in the sulcus, are very resilient, to use compo, except as used in muscle-trimming, would give you a false depth in the sulcus and the resulting denture would become dislodged with any movement of the mouth. Or, if you have a very loose tissue in the sulcus, with ridges of flesh one often sees, caused by ill-fitting dentures, or a flabby fleshy mouth, to use plaster would be a mistake. So I say again, it is up to the operator to use the material most suited for the class of mouth he is treating.

Here I should like to mention one point in the use of each, that is,

the setting of plaster, and the use of vaseline with compo. The textbooks tell us that the correct moment to remove the plaster impression is when the plaster will break with a clean fracture. In my opinion this is not enough. If you take a small piece of excess plaster, say about the size of a pea, and by pressing it between the forefinger and thumb you can squeeze moisture out, although it may break with a clean fracture, that plaster is not set enough to remove. The correct moment is when the small fragment crumbles under pressure and no moisture is squeezed out. To get this degree of setting, it is necessary to keep testing constantly with fresh fragments of plaster, because if you overdo it there is a danger of the plaster adhering to the roof of the mouth, but with reasonable care this should never happen. If you remove the impression as soon as the plaster breaks clean you run the risk of the bulk of it coming away, but leaving behind a smear of plaster over the undercuts, as, for instance, at the tuberosities. Many times, when training students, have I seen them taking an impression of a mouth with large bulbous tuberosities, and bringing the impression away whole without any breakages, feeling very pleased with their cleverness until they were shown, but the aid of a mouth mirror, a large smear of semi-soft plaster on the tuberosities, which had been scraped off the impression in the process of removal.

With reference to the use of vaseline when taking compo impressions. Some books advocate it, and many people use it to prevent the compo sticking. In some cases of partial impressions it may be advisable to use it, but it is quite unnecessary for edentulous cases. Good Compo, however new, will not stick to the mucous membrane of the mouth if it is allowed to set properly, and it is impossible to get as sharp an impression with a layer of vaseline between your compo and the palate as you would without.

To return to our subject. Having decided whether plaster or compo is the required material to use, the impression can be taken, and if your tray has been correctly made the strain should come on those parts where you want it. Many opinions have been expressed about "equalizing the strain," and various methods of getting the correct pressure have been advocated, such as taking the bite and impression in one, or relieving the central pressure when using compo by having a hole in the roof of the tray, but no two persons seem to agree on the subject, so that I think it becomes purely a matter of experience and no definite rules can be laid down. After all, no denture can be better than its foundation, and experience alone can teach how to make the best of the foundation.

So far, no mention has been made of muscle-trimmed impressions. We all know those flat mouths with practically no ridge and muscles attached to the very summit of the vestige there is; and those stringy

mouths with large muscle attachments; and those with bands of scar tissue, caused by some injury, stretching from ridge to cheek. And I am sure we all know the difficulties of making satisfactory dentures to mouths of this sort. Formerly one took an ordinary impression and eased the edges, when making the denture, being guided by experience, and the complaints of the patient.

Now both plaster and compo operators claim to be able to take a correct impression to which a denture can be made, that does not require touching and will remain firm, however difficult the mouth may be. Some claim, that not only are the muscles given free play, but that they help to keep the denture firm and secure.

Let us consider first the compo muscle-trimmed impression. The original idea was started by the brothers Greene, and now Fripp has improved upon their ideas, and gives us a method of taking an impression, combining bite and impression together, so as to obtain clearance of the muscles in the position the mouth adopts when under biting strain.

His method briefly is this. He takes an ordinary compo impression and casts models. On these he moulds a uniformly thin layer of compo about one quarter of an inch thick, and trims the edges to the size he thinks the denture will be. He backs the compo with a base plate, the edges of which are slightly shorter than the trimmed compo. To this he adds a compo bite-block stuck on to the back of the base-plate. He now softens the compo with a blow-pipe flame, and inserts it into the mouth. The compo being already shaped to the original model, he claims to get even pressure on all tissues. He does not remove the impression, when set, with his fingers for fear of warping, but instructs the patient to close the lips and blow out the cheeks, thereby raising the soft tissues, breaking the suction, and causing the impression to fall. Taking it out, he cools it in cold water. He does not claim this to be a perfect impression yet, but inserts the cold, set impression, into the mouth again and tests for suction. If it is found to be faulty in places, such as the tuberosities (and it usually is), he patches these places with a stick of compo, chills the whole lot again, and with a blow-pipe flame softens the additions only, and re-inserts the impression into the mouth, applying the same pressure as before. In this way he claims that all deficiencies can be corrected and the most perfect adaption made. He does this with both upper and lower, with the difference that the compo on the lower is much thinner than on the upper, about one-eighth of an inch, and he does not intend the lower to be a new impression but merely a bite-block. Now he trims the bite-blocks until he gets the correct bite. He now does the muscle trimming. Leaving the lower bite-block in the mouth he removes the upper impression, cools it, and with the blow-pipe softens the periphery of it on

the one side only, in the bicuspid and molar region, and quickly inserts it into the mouth, telling the patient to bite and suck in the cheeks at the same time. For soft muscle attachments he massages the face. Having removed and cooled the impression he repeats the process for the other side, and for the incisor region, making the patient perform all possible movements of the lips. He now explores the palatal surface with a blunt instrument, for hard and bony tissue, marking its outlines with indelible pencil and, by replacing the impression, transfers the markings to the compo. If he wishes to relieve the denture over any hard areas he scrapes the *impression* over those areas. He now reaches the last stage of muscle-trimming, namely "post-damming." This is the name given to the method of exerting a vertical pressure over the soft mobile part of the palate. To obtain this pressure he adds a thin film of wax, not compo, to the posterior margin of the upper impression, carefully warms it, and introduces it into the mouth. With the lower bite-block in position the patient closes the bite and swallows several times. By this he claims that the posterior margin will be found to accommodate the muscle attachments of the soft palate in all positions. Others, especially Greene, add "conforming" as well as post-damming; conforming being the means of obtaining a slight pressure horizontally around the buccal and labial margins. To obtain this Greene warms the whole of the rim of the impression and quickly inserts it into the mouth and, with the mouth closed, presses the cheeks and lips firmly against the rim until the compo cools. In my opinion conforming is a very doubtful improvement. Even if the whole impression is not warped in obtaining this pressure, it only affords a temporary hold as the tissues soon give to the constant pressure of the finished denture and, unless done very successfully, causes irritation and discomfort.

This then is the compo way of muscle-trimming. Different people have slightly different methods, but it is impossible to mention all their peculiarities, which, after all, are much the same in the end. There is certainly something to be said for the compo method, especially when the trimming is done with the mouth under normal biting strain, and I have had some excellent results by Fripp's method, but it is a very slow business and requires very careful manipulation not to warp the impression.

Now for the plaster method. I cannot say whose idea this is, but it is one I have adopted and use in every case when the mouth is suitable for plaster. It is quick and gives equally as good results as the use of compo. Briefly, the method is to take a preliminary impression and make a special tray to the resulting model. This tray can either be made in hardbake or metal, but in either case must be handleless and made very shallow at the margins, but wide enough to carry enough

plaster into the sulcus. Run the plaster, about the consistency of cream, over the tray, and insert into the mouth, pressing the tray up into position with the forefinger and telling the patient to close the mouth over the finger, suck in the cheeks, purse the lips as though whistling, and swallow. The cheeks and lips can be massaged if necessary, and the finger can be removed if the operator can trust the patient not to bring down the impression before it is set. I find it always advisable to instruct the patient what you want him or her to do when tryin-in the tray, going through the movements yourself, then there is no fear of misunderstanding when the actual plaster is in the mouth. When the plaster has set to the required consistency do not attempt to remove the impression with the fingers or the plaster round the margins may collapse, and as it is very thin considerable difficulty would be experienced in piecing the fragments. The same method as in compo is adopted, namely, closing the lips and blowing out the cheeks. This frees the impression and it can be removed without danger of fracture.

In making the model from such an impression great care must be taken not to cut or chip any of the model of the mouth, and in making the denture all of the model representing the mouth must be used. On inserting the finished denture it will be found that the muscles will have clear movement and the denture will remain firmly fixed, no matter what movements of the lips take place. No conforming, except that by naturally sucking in the cheeks, is possible, but post-damming can be accomplished if desired, by padding the posterior margin of the tray with wax.—*The British Dental Journal*.

Officers of the Dental Society of Western Canada, 1927

President, Dr. E. Doyle, Calgary; *Vice-Presidents*, Dr. Harry Garvin, Winnipeg; Dr. Geo. Cameron, Swift Current; *Treasurer*, Dr. Manly Bowles, Winnipeg; *Gen. Secretary*, Dr. P. W. Winthorpe, Saskatoon.

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Dentistry and Public Health



REVIEW of the dental laws of the country and observation of recent changes in certain state laws coupled with the rapidly developing thought that dentistry is a distinct and important feature of health service, seems to indicate that the state dental laws of Maryland should be modified. Any changes in the law which would better enable the legally constituted officials of the dental profession to more efficiently regulate the practice of dentistry should be considered. One question of importance is a registration clause which would go far in promoting the work organized dentists are trying to do in the state. Another point is the desirability of a member of the dental profession on the State Board of Health. The time has come when the health of the community cannot be properly safeguarded without the presence of a representative of the dental profession in the councils of the responsible organized health boards. Dentistry will have done much towards establishing itself in the esteem of the public as an important department of health service when it is recognized as a necessary part of the community health council.—*Bulletin of the Maryland State Dental Association.*

The Dental Society of Western Canada

EDMONTON, 25, 26, 27TH MAY, 1927.



RECOGNIZING that no part of human activity has ever amounted to anything unless well organized, and dentistry proving no exception to the rule, the dentists of the Atlantic, Eastern and Pacific portions of Canada have been drawn together by strong mutually helpful Associations. Through natural obstacles the dentists of the Western Prairie Provinces, numbering in all over 600 practitioners, found themselves in unfavourable geographical relationship with the other parts of the Dominion. Long distances had to be covered at considerable expense to obtain dental knowledge. To remedy this condition, through praiseworthy effort and hard work, the Winnipeg Dental Society in 1925 initiated a movement to bring back to life the defunct Western Canada Dental Association, which in two years' time has come to include the solid block of Manitoba, Saskatchewan and Alberta, under a workable constitution, with financial backing from all three Provinces.

It is the privilege of the Edmonton Dental Society to arrange the first programme embracing all three of these Provinces. This con-

vention will be held in Edmonton, Alberta, on May 25, 26 and 27th, 1927. The heads of the committees are hard at work selecting and securing the foremost in demonstrators and clinicians. To put this new and necessary dental organization on its feet, all that we need is a good attendance. As 1927 is an off year for conventions, and the time we have selected is a good one for a motor trip, we feel that we have an exceptionally good opportunity to present our material to you.

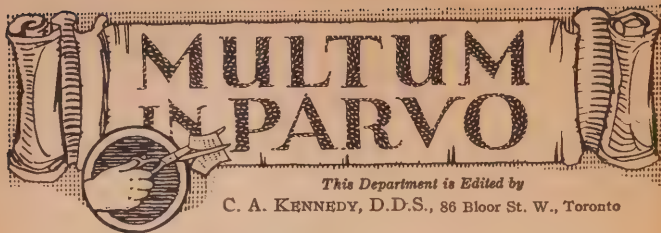
We greatly desire to have you lay plans to support your own organization. We suggest that you take this chance of motoring up here, and use your car to see our city and points of interest near by. In this way you can best obtain knowledge of this country which has everything for prosperity, and come into personal contact with our local men of your own profession who are anxious to meet you. Just mark off those dates on your book before you forget, and we will keep you informed as to our progress.

LESLIE MCINTYRE,
Chairman of Publicity.

HÆMORRHAGE.—Profuse hæmorrhage (purpura hæmorrhagica) is often associated with severe forms of Vincent's infection. This should be immediately attended to, as in some cases it has proved fatal. Treatment consists in curetting the area, thereby removing all irritants, applying the electric cautery, and swabbing repeatedly the whole mucous surface with a glycerine solution of neo-salvarsan.—*Dental Science Journal of Australia.*

HABITS.—A correspondent records a case of persistent diarrhœa in a child, due to aloes painted on the fingers to prevent finger-sucking and nail-biting. These and similar habits are extremely difficult to deal with, and it is often necessary to resort to painting the fingers with nauseous drugs. Such methods are, however, frequently unsuccessful.

There are a fair number of cases in which the child, as well as its parents, is genuinely desirous of curing the habit, but is unable to do so because the act is performed unwittingly. In such cases the chance of success is considerable. A device employed by a well-known dental surgeon to cure the habit of biting the nails is of interest. The patient wanted to stop biting his nails, but could not do so. Aloes was tried without success. Ultimately an apparatus was constructed consisting of a gold bar fitting the lingual surfaces of the lower teeth, with two cleats running over the cutting edges of the lower incisors. This effectually prevented the upper and lower incisors from meeting, but did not interfere with the premolar and molar occlusion. It would have been useless without the collaboration of the little patient, but with his assistance it proved a complete success.—*British Medical Journal.*



A SIMPLE AND USEFUL METHOD OF INSERTING SILICATE FILLINGS.—A celluloid strip is slightly vaselined and drawn tightly round the tooth with the fingers of the left hand, over the plastic filling packed in the cavity to excess. The strip is then clamped firmly on the tooth with a miniature pair of Spencer Wells artery forceps. A piece of amadou dipped in synthetic varnish is then used to contour the lingual aspect of the strip which softens under its application and can readily be moulded, so that excess of filling is worked to light contact approximately and the lingual aspect of the filling so shaped under the celluloid that no grinding will be needed to relieve a close bite. The strip is left in position till filling has set; then readily removed, filling varnished, and patient dismissed, polishing, if needed, being completed at a future sitting. The use of rubber is often avoided by this device, which quickly protects the filling from moisture.—*British Dental Journal*.

TECHNIQUE FOR BACKING UP AND BOXING STEELE FACINGS.—A better technique for backing up and boxing Steele facings, without using the backing material made for that purpose, is as follows:

1. Flow inlay wax into the slot (previously lubricated) and firmly press into position. Remove, examine carefully for any imperfections replace and remove all excess.

2. Press and conform a piece of Kerr sheet wax, No. 28 gauge, over the lingual and ridge lap surfaces of the anterior facings, and in the posterior facings cover all surfaces excepting the occlusal and ridge lap portions. Trim just below the mesial, distal and lingual occlusal marginal ridges.

- 3 Over the sheet wax, uniformly flow a thin layer of inlay wax, first piercing the wax with the hot spatula at the location of the slot, so as to connect both layers of inlay wax. Trim off all excess.

4. The sprue is placed over the slot, as the greatest thickness lies there. In anterior teeth, place this at the linguo-gingival margin or prominence.

5. Invest and cast. If there is more than one, solder the boxes

together, at the same time soldering the pontic portion to the abutments.

6. The posterior facing is prepared by stoning off a small amount of porcelain from the lingual surface and along the mesial and distal surfaces, facially, almost approaching the mesial and distal marginal ridges of the facial surface. Slightly taper these surfaces towards the gingiva, so as to allow for the easy withdrawal of the wax.

The disadvantage of pressing one large mass of wax over the facing is that we do not get as accurate an impression as we do when pressing over the thin sheet of Kerr wax; also, the impression of the slot portion may not be complete. In carving, the wax must be shaved so thin that there is much danger of breaking it, whereas in this method a smooth, thin, uniform result is obtained.

There is much expense saved in eliminating the backing material. Also, a much stronger restoration is obtained, since the backing, box and what contour may be added in the wax, is all cast in one piece.

With a little experience, the whole operation should not require more than five minutes.—*Dental Cosmos*.

TIGHT MUSCLES.—This condition can be largely obviated by instructing the patient to stretch and massage the lips daily for a few weeks, as many times a day as is convenient. The lips should be thoroughly lubricated with vaseline, cold cream or something of that nature, two fingers of each hand placed in the corners of the mouth and the lips stretched and massaged freely. If at the end of this time the mouth is still too contracted to permit of the insertion of the necessary size impression tray, a wax tray may be made to approximate the shape of the mouth. This wax tray may be warmed slightly at the median line and bent together at the heels for insertion into the mouth, after which the heels may be bent out to conform with the ridges for trial fitting. It must then be again bent in at the heels for removal. Now warm again in centre, fill with soft plaster, insert into the mouth, press heels out to conform to ridges and seat. When the plaster is hard, fracture, take out in pieces and re-assemble for pouring.—*Dental Digest*.

PREVENTIVE ORTHODONTIA.—If the dentist is able to impress on the mother the importance of proper function of the jaws, lips, cheeks, and tongue, so that she may recognize and forestall pernicious habits, he will be able to aid materially in preventing malocclusion. If he warns her of the deforming effects of external pressure, such as leaning on the hands and arms while sitting and of resting the face upon them or upon hard pillows during sleep, he will accomplish something. If he can make suggestions concerning diet that will be of benefit to the growing denture, these benefits will be reflected in the general health of the child.—*Harris W. McLain, Chicago, Ill.*

The COMPENDIUM

This Department is Edited by
THOMAS COWLING, B.A., D.D.S., Toronto.



INCIDENCE OF DENTAL DISEASE IN CHILDREN.

RECENTLY a report on the dental inspection of 4,000 children in elementary schools in England was considered by the Medical Research Council and some of the findings were published. From this report we learn that, generally speaking, disease arises in fissures or pits, or on those surfaces where teeth come into contact with each other. In the upper first permanent molars the side adjacent to the second temporary molar or the pits on the occlusal surface are most frequently attacked, while the distal side is hardly ever affected until after the eruption of the second permanent molar.

Fissures and deep pits wherever they occur are very common sites of dental caries. Briefly, it may be deduced that any arrangement of the teeth that increases the difficulty of cleansing them tends to the encouragement of dental caries. Of all the permanent teeth, the six-year molars decay most rapidly after eruption; 6.8 per cent., as shown by the report, decayed during the sixth year, 12.2 per cent. during the seventh year, 23.5 per cent. during the eighth year; and this proportion rises to 44 per cent. at ten years, 56.5 per cent. at 13 years, provided, of course, that no dental treatment is obtained.

"The progressive nature of dental disease," says the *British Journal of Dental Science*, "is strikingly shown in the interesting tables compiled by Mr. W. H. Jones, in Staffordshire, and by Mr. Baird Grandison, in Cambridge. In the former area it was found that for every hundred children examined at six years of age there were 16 diseased permanent teeth; at seven years this had increased to 61, and at eight years to 78. In Cambridge the numbers for the same years were 17, 54 and 65 respectively."

THROUGHOUT CANADA

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Provincial Editors will appreciate receiving from all local societies copies of papers, society proceedings or personal notes, for publication.

♦ ♦ ♦ ♦
QUEBEC.

SOCIETE DENTAIRE DE MONTREAL.

THE regular meetings of the Society Dentaire de Montreal were held at the Faculty of Oral Surgery on September 7th and November 9th. The essayists were: Dr. Theo Cote, who read a paper on "The Preparation of Cavities for Three-quarter Crowns"; and Dr. E. Dubeau, Dean of Faculty, who read a paper entitled "The Importance of Pathology for the Dentist." These papers were illustrated by lantern slides.

A post-graduate course on Full Dentures is now given to all members of the Society, under the direction of Dr. J. A. Pinault, Professor at the Faculty of Oral Surgery.

The next essayist, to be heard at the December meeting, will be Dean Seccombe, of the Faculty of Dentistry of the University of Toronto.

PAUL GEOFFRION, *Secretary*.

* * *
EASTERN ONTARIO.

DR. WM. E. HARPER, of Chicago, presented a clinic before the Ottawa Dental Society, November 4th, on "Amalgam and its Manipulation".

Drs. J. Lonergan, L. E. MacLachlan, W. A. Armstrong and S. G. McCaughey, of Ottawa, attended the Fall clinics of the Montreal Dental Club.

Dr. Bert Hutt recently delivered an illustrated lecture on "Dental Health" to the pupils of the schools of Chesterville, Ont.

* * *

Several dentists of this district were candidates in the present election. Dr. H. A. Clark, of Brockville, was the Conservative nominee in Leeds; and Dr. E. H. Wickware, of Smiths Falls, the Liberal nominee for Lanark.

* * *

Dr. H. A. Stewart, of Kingston, writes: "The Kingston Dental Association got away to a good start on Friday, November 12th, 1926. Dr. W. B. Amy, of Toronto, addressed us on the subject of Exodontia, Conductive and Infiltration Anaesthesia. His lecture was instructive and very interesting to us all. The rugby classic of the season, Queens vs. Varsity, was scheduled for the following day, and no persuasion was necessary to have Dr. Amy remain over. We were thus enabled to view on Saturday a practical demonstration of the lecture given the previous night. Dr. Edgar Paul, of Toronto, also viewed the Queens-Varsity historical struggle here.

—S. G. McC.

A SIMPLE MATRIX.—The least cumbersome and most quickly applied matrix consists of a strip of metal wedged at the cervical edge with a section of match-stick.

The easiest way to remove this or similar matrices without damage to the filling is either to draw it out sideways or loosen it by gently burnishing round the contact point.

It is a good plan, when cavities extend below the cervical margins (where subsequent finishing is very difficult), to inject a few drops of an anæsthetic solution before inserting the wedge, which can then be done thoroughly and with confidence, so that the matrix will fit the most important place tightly.—*British Dental Journal*.

SIMPLE METHOD OF REMOULDING SURPLUS INLAY WAX.—We all have the experience of accumulating odd pieces of inlay wax, which are too small to make practical use of. To utilize same, roll a photo film lengthways round a lead pencil, with the celluloid next to the pencil, and oiled with castor oil. Tie a couple of ligatures round the film, to prevent same from unwinding. Remove the pencil, melt the inlay wax, and pour, as soon as fluid, into the celluloid tube, standing same on oiled mixing slab to prevent wax from running out. When cold, remove celluloid from same and nick the wax rod about every quarter of an inch or so, as desired, with a sharp knife, when it can be easily broken into pieces as required.—*Dental Science Journal of Australia*.

Obituary

DR. R. B. O'SULLIVAN,

Director of Dental Services, Department of Soldiers' Civil Re-establishment, Ottawa.

DR. RICHARD BENJAMIN O'SULLIVAN, O.B.E., succumbed suddenly to a stroke of apoplexy, on Friday, October 1st, 1926. He had been in poor health for some time previously, though he had been able to return to his work as Director of Dental Services in the Department of Soldiers' Civil Re-establishment at Ottawa.

Captain O'Sullivan was born in Jamaica sixty-three years ago, his grandfather, Sir Augustus O'Sullivan, having been Governor of the Island. Coming to Canada, he graduated in Theology at McGill University, but shortly afterward entered the Dental Department of the University of Pennsylvania. After graduation he practised in the city of Ottawa, and in the early nineties removed to Calgary, Alberta. Shortly after the outbreak of the war he enlisted with the 83rd Battalion in Calgary. He proceeded to France in 1916 with the 38th Ottawa Battalion, with the rank of Paymaster, and was mentioned in despatches. He served as Assistant Adjutant, Field Censor, and Postal Officer, returning to Canada for demobilization in June, 1919.

In his college days he was an athlete of note. While at Pennsylvania he won the heavyweight boxing championship, was on the football team, and rowed "stroke" for a highly successful and famous Varsity eight. Calgary reaped the benefit of this athletic experience, and he did a great deal to promote and foster healthy, clean sport during more than twenty years of residence in that city.

There survives him only his wife, now living at Hollywood, California.

At the time of Dr. O'Sullivan's arrival, Calgary was a small centre for the foothill ranching country—materially, of little account, and culturally, less so. A small group of citizens was laying the foundation of what has now become a keen interest in music, drama and art. With these he was soon allied and took no little part in the work they had commenced.

On the division of the North West Territories into Provinces, he took a leading part in the formation of the Alberta Dental Association, and for some years was a member of the Board of Directors. He was the first President of the Association, and was a pioneer of a better, a more scientific dentistry for the West.

In all, one may sum him up as the pioneer type, one who was not content with the old order and the old things, but was always looking to the new.

Christmas is as Merry as You Make It



HERE is a citizen in town,
Who welcomes Christmas with a frown.
He growls and grumbles when he sends
A little present to his friends;

He says he'd rather use the money
To help the poor, but it is funny
That no one yet has seen him feed
A beggar, and the men who need
Subscriptions always pass him by,—
They say it is no use to try.
He tips no paper boy because
"The lad is paid for what he does."
He says, "This season makes me tired;
It's time that Santa Claus expired."
And then the old grouch wonders why
Nobody smiles when he walks by;
He snarls, "Men are not nice to me;
They're all as surly as can be."

But there's another man as well,
Who welcomes Christmas with a yell
Of "Come on in and join the fun."
He spends his cash till it's all gone;
His presents may not always fit,—
One has to make the best of it,—
At least, each comes with jolly wishes,—
Some half dead bulbs in shallow dishes
For Uncle John; Aunt Sadie gets
Dog collars, though she keeps no pets.
He meets the newsboy at the door,
And shouts, "Come back next year for more."
He may sing carols out of key,
Still, they are filled with joy and glee.
Folks say, "I wish that nut was here;
A sight of him is Christmas cheer."
And he claims, "Aren't people great!
There's not a man alive I hate."

—By FRED JACOB.

Oral Health

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EDITORIAL

*"Christmas comes by a beautiful road,
A road full twelve months' long;
May each sunny mile be lit with a smile,
And cheered by a merry song."*

THE Editor and his Colleagues who, from month to month throughout the year, co-operate in sending ORAL HEALTH to every member of the Dental Profession in the Dominion, extend to the Dentists of Canada, one and all, the sincerest good wishes for a Happy Christmas and a Healthy, Prosperous New Year.

Public Dental Health



JOSEPH KRIMSKY, writing in the "Nation", claims that "it is about time that the medical profession should be socialized, that private practice should be abolished and medical men forced to become servants of the state." He admits that this isn't going to be an easy job.

In this country there is no such thing as state medicine or state dentistry, nor do we know of a single official utterance in favour of such a policy. The responsibility for health is placed upon the individual, both for himself and those depending upon him, and there is little disposition on this side of the water to paternalize any community by the socialization of health service.

There are two main divisions of the public health problem: first, that of education, prevention and health surveys; and the second, that of providing treatment for those citizens who are unable to pay for medical and dental health service. Public dental clinics, if conducted without regard for the person's ability to pay for treatment, would ultimately develop into a state service. Public opinion would not lend support to such a movement, it being out of harmony with the independent spirit of the Canadian people.

This whole problem has been forced to the attention of Ontario dentists as a result of the Ontario Dental Health Day. Dental Health Day was successfully carried on as a culmination of many years of public dental health education through the Oral Hygiene Committee of the Ontario Dental Society. Dental Health activities are now to be incorporated as an integral part of the official public health programme of the province, and the desire is to determine just what part the Department of Health should play and what responsibility should rest upon the dentists of the province.

It has been suggested that under the following plan the Ontario Department of Health would be glad to co-operate to the fullest extent with the dental profession:

- (1) The Department of Health to accept responsibility for the dental education of the public on the understanding that this will not interfere with educational work undertaken by dentists, and that public dental surveys will be considered as a part of such educational work; and that the Oral Hygiene Committee of the Ontario Dental Association be an advisory committee in all questions of dental educational propaganda.
- (2) Dental treatment in all its phases, including dental clinics, to be controlled by the dental profession of the Province, on the understanding that this will not relieve the Department of Public Health of the responsibility of assisting financially in the support of such clinics, the extent to which the department will

extend financial assistance to be determined by future experience. It is, of course, understood that these arrangements must not in any way interfere with public dental services already established, unless by mutual consent of the parties interested.

Such a plan would provide for the better education of the public in the prevention and control of dental disease, and result in the more efficient organization of public dental services in hospitals or other community clinics for those entitled to such service.

Election of Board of Directors of the Royal College of Dental Surgeons of Ontario



AT the biennial election of the Board of Directors of the Royal College of Dental Surgeons of Ontario, the following were elected:—

- District No. 1—Dr. S. S. Davidson, Ottawa.
- District No. 2—Dr. H. Irvine, Lindsay.
- District No. 3—Dr. J. A. Shannon, Sault Ste. Marie.
- District No. 4—Dr. R. Gordon McLean, Toronto.
- District No. 5—Dr. G. H. Holmes, Owen Sound.
- District No. 6—Dr. W. M. McGuire, Simcoe.
- District No. 7—Dr. S. M. Kennedy, London.
- District No. 8—Dr. W. G. Thompson, Hamilton.

Representative from the Faculty of Dentistry of the University of Toronto—Dr. A. D. A. Mason, Toronto.

Correspondence

Ottawa, 1st December, 1926.

To the Editor:

I have heard within the past few days that the Canadian Dental Association is to meet next time with the Ontario Dental Society in Toronto. It has also been rumoured that the Canadian Dental invited the Ontario to meet conjointly with it in Montreal at its next meeting, and that this was rejected. If both these rumours be true, perhaps it is a case of "the mountain coming to Mahomet."

In any case, the joint meeting commends itself. It has been argued at times that the Dominion Association, serving as it does such a sparse population over so great an area, cannot be made a successful financial and national organization as a separate convention. That, perhaps, is true, but it is most certainly advisable to retain it in a very vigorous form as a national legislative body. Sectionalism seems rife in Canadian Dentistry as in politics. None of us seem to get the national outlook, the larger vision. Perhaps we don't move about enough to know each other; when Ottawans go to Montreal they find a splendid company of men,—likewise when they go to Toronto, or Halifax, or Vancouver. When one gets to know the other fellow one generally finds he's a pretty decent chap.

Those men who live in smaller communities have to move about a bit to gain their professional contacts, and in this way getting to know the

other fellow in his home, they learn how fine he is and thus avoid becoming so self-satisfied, so provincial as the man of the larger centre who religiously avoids attending any but his own meetings is apt to be. Necessity forces the small-town man to move about; convenience makes the big-town man a "stay-at-home." A "stay-at-home," unless he be of exceptional calibre, becomes a "provincial." A "provincial" usually becomes a supreme egotist and imagines knowledge and ability begins and ends with him.

The proposed joint meeting in Toronto provides a testing ground. Will Canadians outside Toronto rise to the occasion, think of this meeting as an opportunity to show a national spirit, a wider brotherhood, to get behind the thing and accept some responsibility for the success of the convention and consider it as distinctively a Canadian gathering, and not as belonging merely to Toronto?

And will Toronto remember that this is a national meeting, that there is ability and willingness beyond its city limits, and that while they believe they live in "the Convention City," it would conceivably be a good thing for everybody if conventions were sometimes held in other cities?

There are several things which must be conceded,—that an Ontario meeting held outside Toronto would be smaller in numbers, but if it were, would it not benefit a wider variety of people, in the interest it would create in the local men, in those from surrounding territory who could more easily attend the meeting, and in forcing the "stay-at-homes" to go abroad that year? This, to the writer's mind, is one of the benefits of the itinerant Canadian Society.

Would it not be possible to have the Canadian Association meet conjointly with the provincial bodies in turn, thus avoiding a duplication of "big" conventions during the same year, because the belief is growing that the days of big conventions are numbered? Would it not, too, be a big factor in creating that Dominion-wide spirit which we so sorely need? Dentistry, as a profession, thus has a wonderful opportunity to demonstrate the abolition of sectionalism within its body.

Would not the same thought be good for provincial bodies, if decentralization were aimed at? It is useless to shut one's eyes to the evils which consistent centralization has brought about. It puts practically all the work on the central body, with the result that, because they are responsible for the success of the conventions, they elect practically all the officers, except, perhaps, an odd honorary one, from within their own numbers year in and year out. This produces in the minds of the "outsiders" the idea that the big centres are monopolizing things, or in the parlance of the street, "hogging it." It is not meant that outsiders crave office, but they do resent the fact that the centralizers forget that others are willing and anxious to help, if given an equal chance.

The writer would like to use as an illustration of what he means, and as a suggested cure, the case of the Ontario Dental Society, if he can do this without being accused of washing linen on the public highway.

Could the effectiveness of the Ontario Society be improved by dividing the Province into districts,—and for convenience one could use the electoral districts of the R.C.D.S. as bases? Over each of these districts could be elected a councillor or regent who would have a place on the Advisory Board of the Ontario Dental Society. As an example, one might use the Eastern Ontario Dental Association, which comprises exactly the area embraced in District No. 1 of the R.C.D.S. The president of the E.O.D.A. could automatically become the councillor of District No. 1 on the Board of the Ontario Dental Society. Representation from the other districts could be obtained similarly.

If this plan worked successfully in the Ontario Provincial Society, could not the same plan be extended to the Dominion Association, making the president of each provincial body automatically a member of the Board of the Dominion body? In this way Canadian Dentistry would have a co-ordinated organization from the smaller groups right up to the largest body. Thus in time of necessity the Canadian Dental Association could speak authoritatively for Canadian Dentistry, which would not be represented as at present by separate and distinct groups.

Thus could Dentistry present to Canada an example of Dominion-wide brotherhood.

S. G. McCAUGHEY.

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